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CIVIL DEFENSE: 1960-67

a bibliographic survey



HEADQUARTERS,
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DEPARTMENT OF THE ARMY
OFFICE OF THE SECRETARY OF THE ARMY
OFFICE OF CIVIL DEFENSE
WASHINGTON, D.C. 20310

August 1967

Civil defense as a program has one central purpose in our structure of national security: to preserve life and speed recovery in the event of attack against the United States.

Civil Defense as a subject has many facets. The variety is indicated by this bibliographic survey.

Viewpoints differ on the subject of civil defense, just as they do with respect to many other nationwide programs. Students of the subject should find this document, prepared by the Army Library, of considerable assistance in learning about and assessing the programs of civil defense in the United States and other countries.

A handwritten signature in dark ink, appearing to read "J. Romm", is positioned above the typed name.

Joseph Romm
Acting Director of Civil Defense

ANALYSTS' NOTE

This bibliographic survey was undertaken at the request of the Director of Civil Defense, Department of the Army. The literature covers the period 1960-1967. The Army Library, Staff Support Directorate, The Adjutant General's Office, among its many holdings, is also heavily oriented in its collection of civil defense materials. The unclassified studies, books, and periodical articles included in this DA Pamphlet have been selected from the several thousand available on the open shelves in The Army Library. Some additional materials were obtained through the courtesy of the various divisions of the Office of Civil Defense and these are identified by an asterisk preceding the citation.

Internally the bibliography is arranged into six sections and offers materials that range from the highest policy levels to the basic manuals, handbooks, and directories, and should prove to be a handy source of information both for the policy-maker in search of data on the place of Civil Defense in the overall strategy of the United States, as well as to those who are interested in shelter design, public alert systems, or where and how to obtain a film on civil defense. A good portion of the materials included deal with the subject of postattack recovery. An entire section is devoted to the experiences of civil defense in foreign countries.

The materials in the appendixes were selected with the view of providing helpful information in support of the main body of the manuscript.

It is hoped that this bibliography will serve as an impetus to further documentation in the nontechnical areas of civil defense, where a vast quantity of additional worthy documents awaits the patient researcher and bibliographer.

No effort was made to delete or exclude references by reason of their controversial nature. On the other hand neither the sponsoring agency nor any other agency of the US Government endorses any of the views expressed or attests to the accuracy of the information contained therein.

PAMPHLET

No. 500-3

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HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON D.C., 18 December 1967

CIVIL DEFENSE 1960-1967: A BIBLIOGRAPHIC SURVEY

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CIVIL DEFENSE 1960-1967: A BIBLIOGRAPHIC SURVEY

I. The Menace of Nuclear War and Strategies for National Defense

A. THE SEARCH FOR PEACEFUL ALTERNATIVES: THE ASSUMPTIONS AND THE LIMITS

ACCIDENTAL WAR; SOME DANGERS IN THE 1960's, by David E. Cummins and others. Columbus, Ohio State University, 1960. 19 p. (Mershon National Security Program Research Paper.)

This paper summarizes the result of a study of the problem of accidental war (war by miscalculation or unintentional war). The study was undertaken in the belief that no prior efforts were made to systematically examine and bring into public discussion the problem of accidental war, in relation to the likely political and military-technological outlook of the next 10 years. The study is limited to the next 10 years because this now seems to be the critical time period and because predictions further into the future become too speculative. The study approaches the problem of accidental war in three ways: 1. through history, to see what insights and lessons may be applied to the special problems of the 1960's 2. through prevailing (if unpublished) thinking on the subject, as reflected in the views of presumably knowledgeable persons; and 3. through an effort to analyze in some detail various possible types of "accidents" which might occur in the 1960's and the manner in which they could precipitate an accidental war. The third approach makes up the large part of the study. The following major conclusions emerged from the study: 1. there is a significant chance that a major accidental war may occur at some time in the 1960's; 2. the danger of accidental war rises sharply in periods of international tension; at such times normally insignificant accidents may set in motion a kind of chain reaction of events leading to war; 3. the danger of accidental war depends on the nature and balance of nuclear forces and the states of readiness in which they are held. Vulnerable strategic forces, such as manned bombers and some liquid-fueled ballistic

missiles, tend to be dangerous; 4. an accidental war is most likely to come about through the spread of a small war or thorough major high-level miscalculation. It is relatively unlikely to result from purely technical mishaps *except* when complicating circumstances, such as might exist in times of tension, are present; 5. the danger of accidental war increases when a nation's policies and intentions are ambiguously stated and poorly communicated to a potential enemy; and 6. the danger of accidental war increases with the spread of nuclear weapons and their means of delivery. Red China is a cause for special concern in the 1960's. The study suggests a number of steps to reduce the danger of accidental war. For condensation see under same title in January 1961 issue of Military Review.

THE AGE OF DETERRENCE, by George E. Lowe. Boston, Little, Brown and Company, 1964. 324 p.

This book "is a history of the development of strategic theory from 1952 to 1963 It can be considered an intellectual history of strategic ideas advanced by the American defense establishment during the 1950's and early 1960's." The author has attempted "to select representative statements from both Utopian and Traditionalist viewpoints . . . (and) since this study is basically a specialized variety of contemporary intellectual history, the utterances and writings of individuals, publications, and institutions are highly significant because they indicate a position in the continuing strategic debate The ideological conflict among the services over the nature of war and strategy serves as the continuing thread on which 'The Age of Deterrence' is developed." Contents: Traditionalists and Utopians in Defense Policy; 1953—The Genesis of the New Look; 1954—Massive Retaliation Full-Blown; 1955—Coexistence Blooms; 1956—The Great Airpower Debate; 1957—The Ballistic Missile Comes of Age; 1958—The Birth of the Missile Gap; 1959—

The Conflicting Strategies Ripen: 1960—The Continuing Strategic Debate; 1961—The Kennedy Shift; 1962—The Rise and Fall of Counterforce; and The Cuban Crisis—Theory in Practice. With selected bibliography.

AMERICAN DEFENSE POLICY. Baltimore, The Johns Hopkins Press, 1965. 471 p. (Prepared by Associates in Political Science, USAF Academy.)

This book reflects the efforts of the many officers in the Dept. of Political Science at the USAF Academy who have taught the course in American defense policy over the past six years. This volume introduces not only the principal issues of strategy but also the institutions and processes by which strategy is made. The following are but a few of the examples of papers included in this book: Vital Interests and Objectives of the United States, by Lincoln P. Bloomfield; The Soviet View of Modern War, by V. D. Sokolovsky; Communist China and Nuclear Force, by Alice Langley Hsieh; Alliances in Theory and Practice, by Hans J. Morgenthau; Developments in Military Technology and Their Impact on United States Strategy and Foreign Policy by The Washington Center of Foreign Policy Research; The Requirements of Deterrence, by William W. Kaufmann, The Delicate Balance of Terror, by Albert Wohlstetter; U.S. Defense Policy for the 1960's, by Alain C. Enthoven; NATO's Nuclear Dilemma, by Henry A. Kissinger; Questions of Priority in Mutual Security Allocation, by Arnold Wolfers; etc. With list of additional readings.

AMERICAN NATIONAL SECURITY; A READER IN THEORY AND POLICY, ed. by Morton Berkowitz and P. C. Bock. New York, The Free Press, 1965. 448 p.

The editors state: "This treatment of national security as a concept and as a field of study is reflected in the organization of our Reader. Part I should give the reader some sense of the important distinction between *concepts* of national interest and national security by showing the evolution of the former and the emergence of the latter. Parts II and III, taken together, outline the scope of the field. Part II reflects the view of national security as a zero-sum game focusing upon the means of maximizing national power within conflict situations. Part III suggests that national security may also be viewed as a non-zero-sum game, emphasizing the growth of international cooperation and the minimization of national power as the road to security. The substantive concerns represented in Part III

have not ordinarily been included in readers on national security. Their inclusion reflects our earlier suggestion about the difference between concepts of national security and national interest. Part IV offers tools by which the area of study previously defined may be investigated. The contributions of these selections are primarily methodological, suggesting ways of reaching a greater clarity and precision in defining both the concept and the field of national security." The contributors are: Chadwick F. Alger, Gabriel A. Almond, Harold J. Barnett; Charles A. Beard, P. M. S. Blackett, Kenneth E. Boulding, Bernard Brodie, Grenville Clark, Inis L. Claude, Jr., Karl Deutsch, Charlotte and George Dyer, Alain C. Enthoven, Louis Henkin, Charles J. Hitch, Marvin Hoffenberg, Samuel P. Huntington, Fred C. Ikle, Philip C. Jessup, Stephen B. Jones, Morton A. Kaplan, James E. King, Jr., Klaus Knorr, Howard E. Koch, Jr., Harold D. Lasswell, Wassily W. Leontief, Roland Neely McKean, Hans J. Morgenthau, Gunnar Myrdal, Robert C. North, Charles E. Osgood, Robert E. Osgood, Don D. Price, Anatol Rapoport, William H. Riker, Henry S. Rowen, Thomas C. Schelling, Warner R. Schilling, Howard J. Taubenfeld, Arnold Wolfers, Ronald J. Yalem, and Dina A. Zinnes. Some of the topics included in the Reader: global strategic views; the future of general war; the anatomy of deterrence; the theory of limited war; unconventional warfare; strategy and tactics in internal political strife; the role of deterrence in total disarmament; functional international cooperation: patterns for the future; the case for graduated unilateral action; political integration and security communities; the calculus of nuclear deterrence. Selected bibliography lists the following: bibliographies, documentary collections, and periodicals, and includes materials on the following subjects: general strategy and general war; limited warfare; unconventional warfare; history and analysis of war; the economic problem: 1. the allocation and mobilization of resources. 2. foreign aid and trade; the general policy process; the role of the President and the Executive Office; the Department of Defense; diplomacy and the Department of State; the role of Congress; the role of parties, public opinion, and nongovernmental groups; strategic intelligence, propaganda, and psychological warfare; science, scientists, and technology; the problem of civil-military relations; disarmament and arms control; international organization, law, and regionalism; theories and methodologies.

THE ATOMIC AGE; SCIENTISTS IN NATIONAL AND WORLD AFFAIRS, ed. by Morton Cridzins, Eugene Rabinewitch and others. New York, Basic Books, 1963. 616 p.

Articles from the Bulletin of the Atomic Scientists 1945-1962. The chapters are: Before Hiroshima; Failure to Achieve International Control of Atomic Energy; Continued Search to Safeguard the World; The End of the American Monopoly in Nuclear Weapons; The Vulnerable World; United States Foreign Policy (Atomic Weapons and American Policy); Disarmament, Deterrence, Arms Control; Fallout, Civilian Defense, and the Test Ban; Soviet Espionage and Secrecy in Science; Loyalty and Security; International Cooperation in Science and Technology; The Pugwash Conferences on Science and World Affairs; Bases for Hope (Pushing back the Clock of Doom). With biographical sketches of contributors.

BIGGER WARS AHEAD? INTERVIEW WITH EXPERT ON STRATEGIC PLANNING, in *U.S. News & World Report*, v.58, no. 23 (7 June 1965) 42-49.

"As a 'little' war grows in Vietnam: Soviets threaten to step in. . . Red China sets off a new atom bomb. . . Is the world heading toward a bigger conflict? Could it come to a nuclear war? For authoritative answers to such questions 'U.S. News & World Report' invited. . . one of this country's . . . experts on military planning in a nuclear age, [Herman Kahn]. . . In this. . . interview, he tells how he thinks nuclear war can be avoided. . . even though little wars may spread."

THE CHINESE BOMB MENACE, by T. George Harris, in *Look*, v.28, no.24 (1 December 1964) 28-29.

An analysis of the worldwide implications of the Communist Chinese atom bomb. Notes that the tendency in the West is to minimize the technological, political, and military aspects of the recent Chinese achievement, just as years ago the implications of the Russian A-bomb were underrated, but the true picture is that the Chinese A-bomb can only be a menace to the free world. Points out that it will be the business of US policy to make sure that China does not start using her new weapon.

DESIGN FOR SURVIVAL, by Gen. Thomas S. Power. New York, Coward-McCann, 1964. 255 p.

Gen. Power is the retired Commander in Chief of the Strategic Air Command. Contents: The Lesson

of Cuba; Nuclear Revolution; The Communist Threat; What Price Peace?; The One-World Syndrome; Deterrence Dilemma; Basic Principles of Deterrence; The Tools of Deterrence; The Deterrent System; Some Issues of Limited War; Deterrence and Space; and The Ultimate Weapon. Gen. Power "believes. . . that his nation and the world may be at a turning point; that we cannot. . . arm and disarm simultaneously; that the one-world syndrome. . . cannot produce the 'brave new world' but could imperil our national future; that the Communist charter for conquest remains clear, and that the battle for survival is unending." Gen. Power would "radically augment our civil defense, restore minuteman missiles to roving freight cars, and stop phasing out strategic bombers." Excerpts from chapter nine appear as: The Nature of the Deterrent System, in *Air Force*, v.48, no.3 (March 1965) pp. 64-70. The excerpt discusses the "Deterrent System [which] today includes not only the actual weapons but all the complex organization that makes up our strategic defense establishment. Critics call for drastic alternations in this system. But, feeling that it is basically sound, General Power. . . tells why we should be cautious about changing. . ."

Bussey, Donald S. **DILEMMAS IN MILITARY STRATEGY**. *Worldview*, v.8, Sept. 1965: 8-12.

Modern military strategy often faces the dilemma of choosing between conflicting objectives while maintaining proper balance between desirable ends. The wish to strengthen action policy through implantation of declaratory policy (a strategy always difficult for an open society) sometimes alarms and alienates allies. The desire to avoid a general war impels military thinkers to argue for absolute world stability, even though such stability might lead to instability, at the nonstrategic level. The loss of strategic deterrence, for example, would automatically increase the likelihood of limited wars. "The unrelenting pursuit of military advantage may lessen rather than enhance security." Introduction of a massive civil defense program or perfection of an antimissile defense system might destroy strategic parity and "be unacceptably risky because of its destabilizing effect on the strategic environment." While major powers work to secure absolute mutual deterrence in order to preclude the outbreak of a general war, strategists understand that an absolute stalemate might encourage aggression and limited military actions once the fear of igniting a general war were removed. Another category of dilemmas

relates to means-ends relationships. At times freedom must be curtailed to defend freedom better. At other times the desire to protect the integrity of nations cannot be fulfilled without direct intervention in their internal affairs. Military strategy must choose the most beneficial and least offensive of these courses in order to preserve and extend human freedom. (Extracted from: *Arms Control & Disarmament*, v.2, no.2.)

HOSTAGE AMERICA; HUMAN ASPECTS OF A NUCLEAR ATTACK AND A PROGRAM OF PREVENTION, by Robert A. Dentler and Phillips Cutright. Boston, Beacon Press, 1963. 167 p.

"In terms of human beings this book sets forth what a thermonuclear war would entail. It describes how a war could be touched off; summarizes the devastation that would result from different sorts of attack; and traces the prospects for individual, community, and national survival and recovery. It also advances a feasible program for neutralizing the danger of an outbreak of nuclear warfare, and suggests how Americans might work together to achieve this program. . . ." One of the appendixes deals with a state-by-state breakdown of key military, industrial and population targets.

THE LIMITS OF DEFENSE, by Arthur I. Waskow. New York, Doubleday, 1962. 119 p.

The author "examines such major policies of American defense as counterforce theory, the balanced deterrent theory, etc., and points up weaknesses. He puts forward the theory of Disarmament-plus, a policy of total disarmament, enforced and safeguarded by a highly mobile and effective world peace force, in which all means of competition between nations except violence would be legitimate."

THE LIMITS OF NUCLEAR WAR; THINKING ABOUT THE DO-ABLE AND THE UN-DO-ABLE, by Paul Ramsey. New York, The Council on Religion and International Affairs, 1963. 54 p.

An analysis of the moral issues involved in nuclear deterrence, defending the thesis that "counterforce nuclear war is the upper limit of national, politically purposive military action." The author argues that "the No-Cities or Counterforce plus avoidance policy is the only just and sensible way to conduct war; that weapons analysts have sometimes overlooked the distinction between the unthinkable that has simply not yet been thought and the unthinkable that is un-do-able when thought about; that war becomes an abysmal and unlimited conflict of resolutions; that current discussions of

'general' war or 'limited strategic war' need to distinguish more clearly between long-range attacks on strategic forces and strategic attacks on cities; and finally. . . [he advances] tentatively a graduation of policy decisions designed to set 'firebreaks' between the steps in increasing violence, up to the No-Cities or strategic counterforce policy." The author also takes up the moral and practical questions involved in 'deterrence during the war,' which at every stage seems necessary to keep war limited."

Butz, J. S. **MANAGING THE EXPLOSION: TECHNOLOGY IN WORLD WAR II AND AFTER**, *Air Force and Space Digest*: v.48, Sept 1965: 65-68, 71.

World War II affected science and technology to an astonishing degree. Not only did many significant inventions come out of the wartime experience, but, more important, military and political decisionmakers for the first time drew scientists and engineers into the highest levels of policymaking. The priorities of World War II called for organized science, and the result was a technological revolution that wrought profound change—social, political, economic, and military. The now-obvious capabilities of organized science have been primarily employed in military research and development, but its achievements in civilian fields have also been outstanding. If the United States is to maintain its world leadership in technology, science policy decisions must be lifted out of the "closed politics" category. In totalitarian and democratic societies alike such decisions are made by a few men who rarely consult the larger polity. The mechanism of choosing to build the atomic and hydrogen bombs and strategic missile systems exemplifies this pattern of decisionmaking. One impetus for increasing centralization is the rising cost of weapons systems, where any duplication can be incredibly wasteful. But often these costs are partly caused by the paperwork necessary in a centrally controlled organization. Because of the cumbersome nature of modern management, construction of advanced hardware has slowed. One may be a return to the science and technology policies of World War II. (Extracted from: *Arms Control & Disarmament*, v.2, no.1.)

THE "NEW MYTHS" AND "OLD REALITIES" OF NUCLEAR WAR, by Chester C. Ward, in *Orbis*, v.8, no.2 (Summer 1964) 255-291.

"It has recently become fashionable to talk about the old myths and new realities of American foreign policy. The makers of new myths assert that

a strategic stalemate has developed between the United States and the Soviet Union and that, therefore, nuclear war is unthinkable. Among the well-briefed realities being discarded is the all-too-real Soviet objective of world conquest. It is alleged that the Soviets no longer seriously consider the attainment of this goal, particularly as it can be achieved only by the use of nuclear weapons. The time has come to assess the new and the old myths, the new and the old realities." The author discusses: The Twin Assumptions of U.S. Strategy; Recent Evidence of Soviet Intentions; A. Reinterpretation of Khrushchev's January 1961 Speech; A look into the Future; U.S. Defense Trends; Risks and costs; Soviet Strategic Capability; The Genocidal War Plan; Can the Minimum Deterrent Deter?; The Case Against the Genocidal Strategy; etc.

Brown, Neville. **NUCLEAR WAR: THE IMPENDING STRATEGIC DEADLOCK.** New York, Praeger [1965, 1964] 238 p.

Contents.—Nuclear warheads.—Soviet strategic bomber strength.—Western strategic bomber strength.—The war in the ether.—Land-based strategic missiles.—Sea-based deterrence.—New strategic systems.—Some current doctrines.—Civil defense.—Conventional warfare.—The conventional defense of Europe.—Nuclear weapons and Europe.—Conclusion.

A technical study of the possibility and implications of nuclear war and strategy. The conclusion underlines the growing stalemate between the United States and the Soviet Union as opposing strategic weapons become qualitatively equal and as the strategic arms race becomes technically more stable. The main differences in military power between the two opposing blocs are defined in the NATO and Warsaw Pact confrontation. It is important to the defense of the West that NATO remain in being, though perhaps not complicated by a NATO nuclear deterrent. Emphasis should be placed on developing the doctrine of controlled response. Though proliferation is not moving ahead at a great rate, the strategic situation will become more unstable as small, vulnerable nuclear systems multiply. Stability in the overall world situation is possible during the next 10 years, but it is contingent upon the survival of NATO and the United Nations, without which "rapid nuclear proliferation is almost certain." (Extracted from: *Arms Control & Disarmament*, v.2, No. 1.)

100 MILLION LIVES; MAXIMUM SURVIV-

AL IN A NUCLEAR WAR, by Richard Fryklund. New York, The Macmillan Co., 1962. 175 p.

"In any modern war, millions of American and Europeans could die, but our traditional approach of nuclear war could doom many more millions, not as defenders of freedom, but as human sacrifices to an outmoded theory of war. There are two ways that the odds for survival could be lengthened: by achieving safe, inspected world disarmament; and, until disarmament becomes possible, by adopting a nuclear-war strategy that makes sense. We are working toward both goals at the same time, but while we are stumbling on the path to disarmament, we are making sudden and unexpected progress toward a method of war which is a potential lifesaver for many millions of us. This book. . . is an attempt to explain the conflicting proposals for nuclear-war strategy in simple language while showing what they can mean in terms of survival for those of us who may face a sudden doomsday. . . The book tries to describe in detail a new way to fight a nuclear war. The strategy proposed could broaden our ability to deter wars, permit us to defend ourselves if necessary, or help us endure an accidental war without senseless slaughter. . . In the face of possible nuclear war there is a chance we can save 100 million lives in America. . ."

PEACE IN OUR TIME—FACT OR FABLE? by Lt. Col. Fielding L. Greaves, in *Military Review*, v.42, no.12 (December 1962) 55-58.

The author shows statistically and by chart that "peace in our time is a fable. . . . In the past two decades, not only has man managed to upgrade his ability to make war on an ever more massive scale, he has also succeeded in increasing the density of new conflicts per annum."

PLAN FOR SURVIVAL: WE MUST FACE THE DANGER, by Edward Teller and Allen Brown, in *The Saturday Evening Post*, v.235, no.7 (17 February 1962) 32 plus.

"It is not too late for the United States to save itself and the free world. By taking measures clearly within our reach, we can avert an all-out nuclear war. Having achieved that much, we can build a permanent world peace." Dr. Teller outlines four measures, which he feels might become stepping-stones to world peace: "Develop an adequate passive defense in the form of shelters, civil defense organizations, and means of rehabilitating the nation after attack. . . Having survived an attack, be able to strike the second blow. . . Prepare for limited warfare—limited

in scope, area, objectives, but not in weapons. . . Having fully attained a passive defense, a second-strike nuclear force and a limited-warfare potential, we must realize that these three steps have bought us nothing but time. We must use that time to establish a lawful community of nations to ensure lasting peace. Our goal can be nothing less than a world government based upon the principles of freedom and democracy."

Teller, Edward. PLANNING FOR PEACE. *Orbis*, v.10, summer 1966:341-359.

Nuclear explosives and intercontinental missiles have negated the protection of U.S. ocean barriers; and the Nation's security has become as precarious as the European powers' has been for hundreds of years. Disarmament, attractive as it may be emotionally, will contribute to stability only if it applies to every one and is controlled and enforced. At once questions arise concerning the paramountcy of national sovereignty and the right of self-defense. "No one has yet presented a complete and feasible plan for disarmament or arms limitation." Meanwhile, the danger of proliferation renders the international situation yearly more unstable. Recognition of the fact that modern mass-destruction weapons are within reach of numerous countries furnishes persuasive arguments if not for disarmament then at least for arms control. The majority of U.S. policy-makers accept the idea that some form of a test ban is in the Nation's interest. On the other hand, U.S. adherence to a limited test ban may have given the Soviet Union an advantage in missile defense that may be permanent if a comprehensive ban is accepted. To set up arms control rules without providing for enforcement would be futile. Increased security is a function of adequate retaliatory forces. The United States has already taken the first step by acquiring overwhelming second-strike capability. Civil defense measures can give the United States a good chance to survive a nuclear war. Delayed response may emerge as "the safest, most practical, morally justifiable alternative open if we are ever forced to respond in a nuclear exchange." Proliferation of nuclear weapons will not seriously alter American deterrence. A bigger, stronger, and more assured retaliatory force along with passive and active defense measures, all kept up to date, will ensure survival. Increased U.S. strength will also strengthen NATO. Providing the European allies with a missile defense with ample safeguards against misuse could be the wisest move the Nation can make to strengthen the Organization. "The best

guarantee of peace is appropriate force in the hands of those who want peace." (Extracted from: *Arms Control & Disarmament*, v.3, no.1.)

PLANNING OUR MILITARY FORCES, by Harold Brown, in *Foreign Affairs*, v.45, no.2 (January 1967) 277-290.

"Uncertainty is necessarily the lot of the planner, since he deals with the future. Uncertainty can never be completely removed. However, it can be compensated for, and to do so is a continuing responsibility of those who plan military forces. Primarily this can be done by insuring, in so far as we can, that future weapons and forces will be adaptable to the right range of defense needs or, as defense planners often put it, by insuring flexibility. . . To say that there is uncertainty in tomorrow or virtue in flexibility is hardly novel. Reconciling the two, however, is a job calling for much diverse information and refined analysis. To evaluate the process, we must examine further the uncertainty which surrounds weapons choices and consider how best to minimize it and live with it. Let us first consider some uses and limitations of intelligence estimates and then examine the interaction of strategy and technology. In the light of these two exercises, the timing of decisions leading to full-scale weapon development takes on special importance, because such decisions rough out critical boundaries of the capabilities of our future forces and the sensitivity of that capability to the actions of others. Finally, within these boundaries, we can attempt to indicate some general factors which enhance force flexibility and some examples of the sort of flexibility which may be demanded of weapons currently under development."

RUSSIA'S PLANS FOR THE NEXT WAR, by Maj. Gen. Max S. Johnson, in *U.S. News & World Report*, v.54, no.14 (8 April 1963) 52-55.

"Soviet strategists have blueprinted a nuclear blitzkrieg for the new war. Primary target: the United States and everything in it, including millions of civilians. Russian planners don't see a 'contained war.' They visualize an East-West war for survival, and they intend to go all-out at the first alarm. The whole strategy is laid out in a . . . Soviet military study," *MILITARY STRATEGY*, published in September 1962 by the Soviet Ministry of Defense.

SOVIET NUCLEAR DEFENSE POLICY, by Philippe A. Clavier, in *Military Review*, v.47, no.1 (January 1967) 72-77.

"For the United States to base her expectation of the Soviet nuclear defense strategy on her own defense policy may be dangerous. In fact, it has been suggested that the Soviet nuclear defense policy may be based on completely different premises from those of the United States. Alternate policies exist which favor the present Soviet defense posture far more than usually estimated. Americans profess reliance on penetration by exhaustion. But does it make sense to implement a defense which cannot keep up with the offensive arsenal of the enemy? It may at most force the enemy to prepare a larger offensive arsenal. If it is economically feasible for the enemy to forge this larger arsenal, why is it not feasible for the defense to remain in the race? If it is not feasible for the defense to remain in the race why implement any defense at all? Why not use the funds available more efficiently and increase one's offensive capability? Because the Soviets have implemented what seems to Americans to be a partial defense, it behooves us to find possible reasons for such a move."

STALEMATE—OR? by Hanson W. Baldwin, in *U.S. Naval Institute Proceedings*, v.90, no.4 (April 1964) 48-55.

"... Two topical problems in this nineteenth year of the atomic age—the stoppage of nuclear weapons and the proliferation of nuclear weapons—emphasize the grotesque dimensions of the so-called stalemate of terror in which we live. ... There have been, within the past year or so, several major developments in the Soviet Union and in the United States in the continuing attempts ... to define nuclear grand strategies calculated to strengthen their security. These have included both military developments and theoretical expositions. (The author discusses Russian and U.S. strategic concepts.) The author concludes that "the greatest deterrent to war will be not merely and not only a clear-cut U.S. nuclear superiority. The will to use it in defense of vital interests is an essential element of the deterrent, and it must include a demonstrable ... superiority by the United States in military technology and in other forms of power throughout the military spectrum."

STRATEGIC DETERRENCE CONTINUES AS THE NUMBER ONE DEFENSE GOAL, in *Armed Forces Management*, v.13, no.7 (April 1967) 65-71.

"The time has passed when strategic offensive forces, strategic defensive forces and civil defense

could be discussed as separate and distinct entities. Today these three major programs constitute the foundation of United States general nuclear war capabilities. Pressing this point in his posture statement to the joint session of Congress' Armed Services Committee, Secretary of Defense Robert S. McNamara stated, 'Because of their close interrelationship and, indeed, their interaction, it is essential that all three of these programs be considered within a single analytical framework'."

STRATEGIC ROCKETS, by Marshal Nikolai I. Drylov, in *Military Review*, v.44 no.12 (December 1964) 33-35.

The author, Commander-in-Chief of Soviet strategic rocket forces, claims that the tremendous achievements of heavy industry have allowed the USSR to create a powerful base on which to build enough nuclear weapons to deter any aggressor. The new series of nuclear warheads of from 50 to 100 MT and the new types of super-powerful missiles tested during the spring of 1963 enable the USSR to annihilate whole countries with a few nuclear weapons. He states that automatic guidance systems completely independent of ground-guidance equipment make strategic missiles invulnerable in flight. It is impossible to take measures against the rocket, either in flight or when it enters the enemy's anti-ballistic missile defense zone. Soviet strategic missiles are relatively easy to use and can be fired literally in minutes, even from unprepared field launching pads. (Digested from *Survival*, Gt. Britain, Jan-February 1964).

A THEORY OF CATALYTIC WAR, by Donald H. Kobe, in *The Journal of Conflict Resolution*, v.6, no.2 (1962) 125-142.

One aspect of the Nth country problem is the possibility that a country could attack another country, with the intention of having the attack attributed to a third country. The country attacked would retaliate against the third country, thus touching off a chain reaction of retaliation and counter retaliation. This process is known as catalytic war because the initiating country would hope to emerge without suffering any damage. "This paper develops a theory of catalytic war which will enable the prediction, given information about the policies and capabilities of the various countries, of which countries will be affected, and to what extent, by the chain of events resulting from an attack on one of the countries. Therefore, it can be predicted under what conditions a country would find it favorable to ini-

tiate a catalytic war." The theory is developed by the author and illustrated by two examples. With references.

ON THERMONUCLEAR WAR, by Herman Kahn. Second Edition. Princeton, Princeton University Press, 1961. 651 p.

The lectures that form the body of the book were initially delivered in March 1959 at Princeton University for the benefit mainly of the author's colleagues at The Center of International Studies. The concepts on which the lectures are based originated in work done under the auspices of The Rand Corporation and the Center. "Men and governments have long lived with the painful problem of choice . . . The final outcome of benevolent, informed, and intelligent decisions may turn out to be disastrous. But choices must be made . . . So it is with the most dramatic 'choices' open to the free world in our day: arms control, peaceful coexistence, rearmament, dynamic rollback, appeasement, Soviet domination, thermonuclear war . . ." This book examines the military side of what may be the major problem that faces civilization, comparing some of the alternatives that seem available and some of the implications in these choices. The discussion has been restricted, for the most part, to the deterrence and waging of thermonuclear "Central Wars" between the US and USSR, touching lightly on limited wars and related alliance problems. Throughout the lectures, Mr. Kahn discusses the following various facets of arms control: arms control, arms control and clandestine intelligence, arms control and communicating with the enemy, arms control problems and difficulties, arms control and disarmament, arms control of Doomsday machines, arms control during hostilities, arms control compatibility with minimum deterrence, arms control and false pre-emptions, arms control as forced by public opinion and by technology, arms control "games," arms control and "how wars start," implicit arms control, implicit ban on use of nuclear weapons, inadequate preparation for negotiations of arms control, influence of arms control in 1961, inspection for arms control, Korea—example of arms control, major areas for arms control, mutual interest in arms control, narrow approach to arms control, arms control of nuclear explosives, possibility of arms control in general and in 1965 and in 1969, preparation for violations of arms control, punishment for evasion of arms control, arms control of use of nuclear weapons, USSR attitude toward arms control, USSR attitude proposals for arms control,

Versailles Treaty as example of arms control, violators vs. public opinion, and arms control and systems. Also of interest are discussed such problems as accidental war, arms race, disarmament, technological race, probability of thermonuclear war, among others. The author believes that "unless we have more serious and sober thought on various facets of the strategic problem . . . we are not going to reach the year 2000 . . . without a cataclysm of some sort . . ." For an extract of the book, see also **CAN THE NUCLEAR DETERRENT STILL PROTECT THE WESTERN WORLD**, by Herman Kahn, in *The Fifteen Nations*, no.20 (June 1961) 38-39 plus.

WE CAN LIVE THROUGH NUCLEAR ATTACK . . . AND RECOVER, by Rogers S. Can-nell, in *Air Force and Space Digest*, v.43, no.2 (February 1960) 52-56.

"Nonmilitary defense of our homeland can be effective. We have both the technical know-how and the economic wherewithal to achieve protection. With sufficient protection we can also recover from an attack—again, provided we are prepared in advance. These conclusions are the answer to the heavy feeling of hopelessness with which many, perhaps most, persons face the prospect of thermonuclear war. In future total war, the major combatants would fire missiles at each other's homelands. Two simple examples serve to illustrate the importance of nonmilitary defense in total war—one in which the US is attacked first, and the other in which we respond to an act of aggression with massive retaliation. Even in the least destructive attack, the non-military defense role is important. In more destructive attacks, where nonmilitary defense is even more important, it can also be very effective . . . True preparedness requires a nonmilitary strategy that includes a wide range of factors to meet a wide range of possibilities and the time to start being truly prepared is now."

B. NUCLEAR WEAPONS, ARMS CONTROL, AND DISARMAMENT

1. Miscellaneous Aspects

ARE NUCLEAR WEAPONS OBSOLETE? by Herman S. Wolk, in *Military Review*, v.47, no.1 (January 1967) 67-71.

"Nuclear weapons have surely helped immeasurably the cause of world peace, but their usefulness over the past 20 years has not always been appreciated . . . One of the most popular shibboleths is the idea that nuclear weapons have become

obsolete in what is obviously an era of limited conflict . . . This type of reasoning leads to the conclusion that general and complete disarmament, or at least nuclear disarmament, is desirable and even mandatory if the world is to live at peace . . . No matter what the propagandists say, disarmament is not the first priority goal of any government in the world today. This priority everywhere goes to the protection of the national security. The more destructive the weapons, the less chance of their being used militarily. The continued usefulness of nuclear arms is based on the fact of developing political issues dividing the world community which makes disarmament impractical at this stage of world affairs. Indeed, it can be argued that disarmament would now only exacerbate world tensions. Outlawing certain weapons is not likely to change man's nature . . . Perhaps, paradoxically enough, these weapons will turn out to have won the peace that is so anxiously desired."

THE ARMS CONTROL AND THE PROBLEM OF EVASION, by James K. Batten. Princeton, N. J., Princeton University, Center of International Studies, 1962. 28 p.

This monograph is based on a paper written by the author in a seminar on National Security Problems conducted by Thornton Read and Klaus Knorr at the Woodrow Wilson School of Public and International Affairs, Princeton University, in the Spring term of 1962. It is concerned with the problems of evasion and the motives that could prompt a nation to evade, as well as with planning for evasion (clandestine deployment of ICBM's).

BOMB SHELTERS WILL NOT SAVE US! by Robert B. Meyner, in *Coronet*, (September 1960) 63-67.

The then Governor of New Jersey "declares that our hope for survival lies not in underground vaults, which may become mass mausoleums, but in the militant might of the human spirit—shielded by faith and armed with reason." The Governor maintains that "There is only one way to assure the survival of 180,000,000 Americans. We must have peace. Not a cringing, cowardly 'peace at any price,' as destructive to the human spirit as the most devastating defeat; but a peace predicated on strength, dignity and reason. This is a dynamic peace for which we must mobilize every resource at our command. And to achieve it, we must intensify the battle for control of nuclear weapons by an international agency."

CHANGE, HOPE, AND THE BOMB, by David E. Lilenthal, Princeton, N.J., Princeton University Press, 1963. 168 p.

Based on Stafford Little Lecture series given by the former Chairman (up to February 1950) of the AEC at Princeton University in February 1963, this book delves into US policy on nuclear weapons, disarmament, peaceful uses of the atom, the changing role of the scientists. The book is also a personal statement and "is necessarily a reflection of how the writer sees the world, a projection of his own special and unique experience of life applied to the gravest problems men have faced in many generations . . . More specifically, this book about the Atom is an affirmation of what my own experience of life tells me about how man gets things done, not in the theories and abstraction that are found in books, but in real life." The chapters are: The Imperatives of Change; The Solution Fallacy; Atomic Blind Alleys; The Mythology of Nuclear Disarmament; What the Atom Is Doing To Science and Scientists; Whatever Happened To The Peaceful Atom?; Atomic Anachronisms: The Atomic Energy Commission And The Joint Congressional Committee on Atomic Energy; Change And Hope. The author's conclusion is that man will not destroy either himself or the world in which he lives and that the more time goes by the stronger is the hope.

CHEATING IN A DISARMED WORLD, by Robert Neild, in *Disarmament and Arms Control*, v.1, no.2 (Autumn 1963) 133-143.

"Using the technique of the strategic analyst and simplifying a disarmed world so that two gambling robots, free of all inhibitions, face one another, one may conclude that a nation which cheated would have to make a big surprise attack if it wanted to be reasonably sure of avoiding a counter attack. A threat of an attack based on concealed weapons would probably be inadequate, since the other side could threaten retaliation on the same basis: one side which succeeds in cheating must recognize that the other side could have cheated too. To be safe, the cheating nation would have to cheat over defensive weapons as well as offensive. In other words, the cheating would have to be on a large scale and it would be technically possible to introduce an inspection system which would detect it . . . Analysed closely, the risk of cheating does not seem as awful as it is sometimes suggested."

THE DAY THEY LOST THE H-BOMB, by Christopher Morris. New York, Coward-McCann,

1966. 192 p.

How an American H-bomb was lost over Palomares, Spain in January 1966, the steps that were taken by the United States to recover it, and how it was found and recovered. Also the effects of the accident on the lives of the people of Palomares. Lessons learned from the accident. Extent of radiation and contamination, etc. Photographs and map.

DISARMAMENT AND THE COLD WAR IN THE THIRTIES, by Hugh R. Wilson. New York, Vantage Press, 1963. 87 p.

"There are certain close parallels between the period through which we are now passing and the nineteen thirties. . . . In the nineteen thirties, the great powers of the world made several fruitless attempts at disarmament." Examining the files belonging to his father, a career diplomat, the author "found . . . some material on disarmament and some light on what might be called the cold war prototype." The author states that "we are at present entering a period of disarmament negotiations particularly concerned with nuclear weapons. The generation of the thirties viewed unrestricted air bombardment of cities, which was then still largely speculative, as an unmitigated horror which might destroy civilization itself. . . . The air weapon was regarded much as we consider the possibilities of the Intercontinental Ballistics Missile." With short bibliography.

DISARMAMENT: HOPE OR HOAX? by Col. Daniel F. Riva, in *Military Review*, v.44 no.8 (August 1964) 26-28.

"The need for nations to discover ways to live together in the community of nation-states has never been as urgent as it is at this very moment. But does disarmament really offer a solution, or is it merely a hoax perpetrated by our enemies to induce us to lower our guard? Why does the Soviet Union profess her desire for disarmament, and yet dazzle us with choreography at the disarmament conferences? Because of the tragic lessons learned from our dealings with the Soviets, we have every right to be skeptical of their sincerity in disarmament negotiations."

AN END TO ARMS, by Walter Millis. New York, Atheneum, 1965. 301 p.

". . . This is not another technical study of disarmament, of which there are many available; rather, it is an examination into the possibility of a demilitarized international society. Obviously, a demilitarized world must also be a disarmed world;

but it is a major contention of this book that disarmament and demilitarization are not synonymous. Before there can be any real hope for the reduction and elimination of the massive modern armaments, the way must be clearly seen toward a demilitarized system of international politics to which the armament will be superfluous. Only when it is realized that our huge modern armaments are as unnecessary as they are already both dangerous and useless will disarmament conferences yield any significant results and the armaments themselves begin to disappear. This book is consequently, an inquiry into possible demilitarization of the international politics system, rather than merely into its disarmament. For almost three quarters of a century—since the first Hague Conference in 1899—the goal of disarmament has been assiduously pursued, by able and dedicated men, with almost no significant result. The long history of disarmament conferences can record but two very partial successes: the Washington treaty on naval limitation in 1922, which survived for barely ten years, and the test ban agreement of 1963, much more far-reaching in its implication but more limited in actual scope. The test ban agreement is, however, of overwhelming importance as a first faint recognition of the fact that brute military power is no longer the *ultima ratio* in international politics. The question to which this book is addressed is the question of whether this dawning realization can be carried onward into the acceptance of a demilitarized world. What follows is not a technical study dealing with the issues of matching force reductions, of inspection and control, of reconversion of arms industries. It is not, in short, about disarmament. It attempts to assess the factors that have stultified all disarmament conferences for the past sixty or seventy years; to take a fresh look at the basic problems of power, of law and order, of our ideas about international politics, which have blocked almost all advance through the disarmament approach, and to ask whether these problems and these ideas are not under-going changes that will make a demilitarized (and therefore a disarmed) system of international politics an actual possibility for the first time in the history of mankind. . . . The chapters are: The Problem of War; The History; The Cold War; The Language ("One cannot escape the fact that most of the language commonly used in the current discussion of international affairs is essentially worthless for our purposes."); Law and Order; A World Policed; From Here to There; Prophecy.

THE MILITARY BALANCE 1966-1967. London, Institute for Strategic Studies, September 1966. 48 p.

This is the eighth of the Institute's annual estimates of the nature and size of military forces of principle powers. Part I—Communist Powers; Part II—The Western Alliances; Part III—Non-Aligned Countries. Appendices include: Estimates of Comparative Strategic Strengths; Major Nuclear Delivery Systems; etc.

NUCLEAR ABOLITIONISM, by Paul Keeskemeti, in *Commentary*, v.36, no.1 (July 1963) 43-48.

"By now all discussion about the problem of how to avert a nuclear catastrophe has been pretty clearly polarized into two opposite positions—usually known as deterrence and disarmament, but more fairly and accurately, characterized . . . by the terms 'stabilization' and 'abolition.' . . . 'stabilizers' stress the positive role that nuclear armaments themselves have played in preserving peace in spite of the high political tension . . . 'Abolitionists' . . . see no adequate assurance of continued peace in all this." The author reviews the arguments used by both sides to promote their theories for "our best chance for peaceful survival." The author raises "several questions about the soundness of the idea that an international police force with a monopoly of nuclear weapons could preserve peace, law, and order in a disarmed world."

*PEACE, 1962, in *New University Thought*, (Spring 1962.) 1-168. (Special Issue.)

Violence on trial, by Gabriel Breton; Public opinion on war and shelters, by Stephen Withey; What every schoolboy knows, by John Weiss; The effects of a 20 megaton bomb, by the Scientists' Committee on Radiation Information; Three sides of the Pentagon, by Arthur Waskow; The limits of defense, by Todd Gitlin; America's new disarmament policy, by Mason Drukman; The history of disarmament, by Nicolette Carey; Perspective on Berlin, by Otto Feinstein; Assessing the Soviet threat, by Robert Paul Wolff; Economics of armament and disarmament, by Semour Melman; A 1961 peace walk, by Lawrence Landry and Edward Ekenfels.

PROBLEMS OF BIOLOGICAL DISARMAMENT, by Ivan Malek and Karel Raska, in *Disarmament and Arms Control*, v.2, no.2 (Spring 1964) 150-156.

"The danger of biological warfare is too often underestimated when compared with nuclear warfare. This danger lies in the greater ease of production and the difficulty and delay in detection of an attack.

The 1925 convention should be reviewed to include an international agreement for mutual protection against biological weapons." The author lists five purposes for which aid should be sought from international organizations like UNO and WHO.

THE ROLE OF DETERRENCE IN TOTAL DISARMAMENT, by Thomas C. Schelling, in *Foreign Affairs*, v.40, no.3 (April 1962) 392-406.

This paper is "a warning against the notion that there is any once-for-all solution to the problems of world peace and government. It is against the notion that if only disarmament is 'total' enough, we can forget about deterrence and all that. It is against the notion that under 'total' disarmament there is no military potential to be controlled, balanced and stabilized." To determine whether and how disarmament might make war less likely, we have to look at what the military opportunities, risks, dangers, fears and potential capabilities would be in a disarmed world. If nations now suspect each other of contemplating war, we have to suppose that they might suspect each other of contemplating rearmament. If nations are willing to risk war, or to threaten it, they certainly might risk rearming or threatening to rearm. Nations thought capable now of being panicked into war might be panicked into rearmament. "To suppose the contrary is to assume away the problem that disarmament is intended to help solve." Contents: General War in a Disarmed World; A War of Nuclear Mobilization; Limited War in a Disarmed World; The Deterrence of Rearmament in a Disarmed World; Attitudes Toward Rearmament; An International Military Authority.

VERIFICATION REQUIREMENTS FOR RESTRICTIONS ON STRATEGIC NUCLEAR DELIVERY VEHICLES, n.p. Bendix Corporation, 1964. 31 p. (Prepared for the U.S. Arms Control and Disarmament Agency under Contract No. ACDA/ST-6.)

This pamphlet is a condensed and unclassified version of the final report of work performed by Bendix for the US Arms Control and Disarmament Agency under the above contract. "The objectives of the study were to develop verification requirements for various possible international agreements on the reduction of strategic nuclear delivery capabilities. Each agreement was examined to ascertain the restrictions imposed on long range missiles and aircraft. Various violations of the agreements were described and their military impact assessed. . . ."

2. Nuclear Proliferation

Zilbert, E. R. THE CHINESE NUCLEAR EXPLOSION, N-NATION NUCLEAR DEVELOPMENT AND CIVIL DEFENSE. (Santa Monica, Calif., Rand Corp.) 1965. 26 p. ([Rand Corporation. Paper] P-3074)

Two decades of concern over nuclear attack have not yet produced sufficient stimulus for constructing an adequate civil defense establishment in the United States. Even the revelation of Chinese nuclear capabilities produced little overt worry. Public apathy stems from ignorance of the situation's seriousness and of the means available for mitigating the horrors of nuclear war. It has kept appropriations low. Events in 1961 stimulated the civil defense effort, but initial progress soon deteriorated into public debate over the wisdom of a shelter program, producing a confusion that allowed the public to return to its state of not thinking about the problem at all. The present program is primarily shelter-oriented. The National Fallout Shelter Survey (NFSS) notes the existence of nearly 127 million shelter spaces having a calculated protection factor (PF) of 40 or more (i.e., the radioactivity level would be not more than one-fortieth of that outside the shelter), and of these about one-fourth are stocked for long term use. Moreover, the unwillingness of the Government or the public to adopt a comprehensive shelter program affects military defense policy—officials concede that a proposed antiballistic-missile defense system without an accompanying shelter program would be senseless, given the ability of an enemy to frustrate missile defenses by firing upwind of the target in order to kill by fallout. "At present . . . 19 years after the beginning of the nuclear age, in the country where nuclear warfare originated, we are superbly equipped to wage an atomic war and ill prepared to survive one." A fresh evaluation of nuclear realities is necessary. Of the infinite variety of forms nuclear warfare could assume, an all-out bipolar war may be the least likely. With rapid nuclear weapons proliferation it is perhaps more realistic to prepare against "limited exchanges," which would not require the possession of advanced missile delivery systems on the part of the attacker. In the event of such increasingly feasible exchanges the provision of shelters against fallout effects would save thousands of lives. (Extracted from: *Arms Control & Disarmament*, v.2, no.2.)

COMING—NUCLEAR BOMBS FOR ALL NATIONS, in *U.S. News & World Report*, v.57,

no.6 (10 August 1964) 48-51.

"The number of nations racing to harness atomic power is mushrooming. Emphasis right now is on 'peaceful uses'—but the tools can quickly be turned to weaponry. On top of it all, U.S. has just signaled a new break through. There is official concern about desperate nations getting cheap bombs. Experts say it is just a matter of time." The article summarizes opinion as reported from Bonn, London, Vienna, Tokyo, and Washington, and the fear and dangers that face the world because it is so easy to make A-bombs. "Countries that cannot build automobiles are on the track of nuclear weapons." . . . "Homemade atomic bombs—the kind that cost the U.S. 2 billion dollars to develop—can now be made for a fraction of that by a determined group of scientists, for perhaps 50 million. And the price is coming down." With chart showing the spiral of war and what it cost in terms of lives in the past and what it will cost in the future: 1820-1859, 92 wars—killing 800,000 people; 1860-1899, 106 wars—killing 4,600,000 people; 1900 to 1949, 117 wars, killing 42,500,000 people; 1950-1999, 120 wars, killing 405,600,000 people; 2000 to 2050, 120 wars, killing 4,048,900,000 people. Also included is a summary of nuclear activities in: Red China, India, Japan, West Germany, Israel, Egypt, Switzerland, Sweden, Netherlands, Canada.

THE DISSEMINATION OF NUCLEAR WEAPONS, by Charles T. Stewart, Jr., in *Military Review*, v.44, no.10 (October 1964) 3-8.

U.S. foreign policy has been founded on the premise that the dissemination of nuclear weapons to many nations would be regrettable and that every effort should be made to discourage it. Yet, some spread of nuclear weapons has already taken place, and a further spread seems inevitable. A U.S. response, whether taking the form of efforts to prevent or slow, or to hasten and facilitate dissemination, cannot be described in generalities; it must be tailored to each unique set of circumstances. Contents: Who Has the Bomb? War Risks; Catalytic War: Most Plausible Fear (Risk of Wars Between Smaller Nations); Deterrence Deliberate Dissemination; Containment; Game Theory; etc.

HOW A NUCLEAR NONPROLIFERATION TREATY COULD WORK, by Lt. Gen. Harold C. Donnelly, in *Air Force and Space Digest*, v.50, no.2 (February 1967) 52-54.

"General Donnelly argues that a nonproliferation agreement can work if it is universally adhered

to and adequately policed through international inspection goals. General Donnelly's article is excerpted from his address 'A Military Look at Nuclear Proliferation,' to Pittsburgh's World Affairs Council, November 17, 1966."

THE NUCLEAR POWER OF CHINA, by Ralph E. Lapp, in *Life*, v.58, no.21 (28 May 1965) 88-92 plus.

"...China can, in a very few years, become the most dangerous nuclear power of all—not because the Chinese leaders can match the U.S. might, but because they do not seem to understand nuclear war and therefore may not be rationally deterred from starting one." On the heels of the second atomic explosion in Communist China, the author, shows graphically how Communist China can catch up in the nuclear race by leapfrogging old scientific barriers, and if they wish, produce a 100-megaton hydrogen bomb by the 1970's. The dangers that face the world; also the vulnerability of China to nuclear attack. Map shows that a manned-bomber strike in the 1960's would kill nearly 500 million Chinese "a factor Mao still does not appear to comprehend."

3. *Nuclear Explosions: Effects (See Also Sections: IV-B and C)*

DAMAGE TO LIVESTOCK FROM RADIOACTIVE FALLOUT IN EVENT OF NUCLEAR WAR. Washington, National Academy of Sciences, 1962. 93 p. (Publication 1078.)

Effects of External Ionizing Radiation on Farm Animals; Effects from Ingestion of Fission Products; Internal Exposure to Gamma and Beta Rays; Effects of Contact with Radioactive Materials; Animals and Poultry as a Source of Food; Exposure of Marine Life; Sterility, Sexual, Genetic, and Embryologic Effects; Protective Considerations for Husbandmen; Research Needs. References. Appendixes.

A DISCUSSION OF THE STATE OF THE ART IN FALLOUT RESEARCH, by J. L. Mackin and S. Z. Mikhail, San Francisco, U.S. Naval Radiological Defense Laboratory, 1965. 73 p. (OCD Project No. 3100, Reviews and Lectures No. 157.)

"Present knowledge and understanding of nuclear fallout is discussed and the state-of-the-art in this field is related to Office of Civil Defense responsibilities and to on-going OCD research. Fallout research is considered in terms of three broad areas, fallout models, radiation fields, and

fallout contamination. Of the fallout models considered, the OCD developed system is the only operational model which provides the kind of detailed outputs required for research applications. Examples are such outputs as soluble radionuclide concentrations for use in food and water contamination studies and beta dose rate data for use in plant and insect beta sensitivity studies. Adequate information is available to describe the relatively simple case of radiation fields above an infinite smooth plane, but improvement is needed in matters of terminology and application of the concepts. Little is known, however, concerning the effects on radiation fields of such factors as trees, foliage, and weathering. The effect of fallout contamination on man's post-attack environment is considered in terms of the basic necessities of food and water, and in terms of possible ecological factors. Only limited information with respect to OCD applications is available on such effects and additional work is required." With references.

THE EFFECTS OF NUCLEAR WEAPONS. Washington, Headquarters, Department of the Army, April 1962. 730 p. (DA PAM 39-3.)

"This book is a revision of 'The Effects of Nuclear Weapons' which was issued in 1957. It was prepared by the Defense Atomic Support Agency of the Department of Defense in coordination with other cognizant governmental agencies and was published by the U.S. Atomic Energy Commission. Although the complex nature of nuclear weapons effects does not always allow exact evaluation, the conclusions reached herein represent the combined judgment of a number of the most competent scientists working on the problem. There is a need for widespread public understanding of the best information available on the effects on nuclear weapons. The purpose of this book is to present as accurately as possible, within the limits of national security, a comprehensive summary of this information." General principle of nuclear explosions; descriptions of nuclear explosions; air blast phenomena; air blast loading and target response; structural damage from air blast; effects of surface and subsurface bursts; thermal radiation and its effects; initial nuclear radiation; residual nuclear radiation and fallout; radio and radar effects; effects on personnel; principles of protection. Appendixes. Glossary. Illustrations.

THE EFFECTS OF NUCLEAR WEAPONS ON A SINGLE CITY; A PILOT STUDY OF

HOUSTON TEXAS, by Samuel Ewer Eastman. Washington, Institute for Defense Analyses, Economic and Political Studies Division, 1965, 47 p. (Report R-113.)

Contract OCD-OS-63-134; Subtask 4113-C. "This Report outlines an approach to estimating the effects of single-weapon nuclear attacks at the local level, describes the methodology that has been developed to make such evaluations, and presents the results of a pilot study of Houston, Texas." Figures, tables.

*ENVIRONMENTAL EFFECTS OF NUCLEAR WEAPONS, by Robert U. Ayres. Harmon-on-Hudson, New York, Hudson Institute, 1965. Various paging. (Volume I. HI-518-RR.)

Contract No. OCD-OS-62-218. "... Much of the gloom about environmental effects is attributable to the fact that absolute upper limit is often easy to calculate. Thus fires may conceivably destroy everything, epidemics may spread everywhere and kill everyone, the economic system may break down totally. But the *expected value* of damage from a given attack is very hard to calculate unless one knows a great deal about fires, epidemiology, economics, and so forth. Especially, one must know something about the factors which limit the spread of fires or epidemics, or cause a depression to 'bottom out.' A major objective of this study is to gain some understanding of these terminating or limiting mechanisms." Chapter I. Primary Radiological Effects; Chapter II. Primary Thermal Effects; Chapter III. Atmospheric Effects; Chapter IV. Secondary Damage Mechanisms. Tables. Illustrations. References.

EVALUATION OF NUCLEAR WEAPON THERMAL THREAT, by Floyd I. John and Thomas O. Russell. Menlo Park, Calif., Stanford Research Institute, Civil Defense Technical Office, 1966. 99 p. (Contract No. OCD-PS-64-201.)

Prepared for Office of Civil Defense, Department of the Army—OSA under Work Unit 4311 C (1). "The threat to urban areas from fires produced by the detonation of a nuclear weapon may be measured in terms of the proportion of structures that will contain one or more significant fires, i.e., fires producing a flashover. In the study, this proportion is determined for uncrushed structures in which the ignition of an interior fuel by thermal radiation from a nuclear weapon results in at least one significant fire. The proportions of structures containing a significant fire in different land-use

areas are expressed as functions of the radiant exposure outside structures. The functions depend on such parameters as the weapon yield, height of burst, atmospheric conditions, number of fires, and exposure of fuels. Scaling relationships for determining parameter values are given . . ." Appendixes. Illustrations. References (pp. 75-77).

EXPOSURE OF MAN TO RADIATION IN NUCLEAR WARFARE. A SERIES OF LECTURES HELD AT THE CONFERENCE OF THE NATO CIVIL DEFENSE COMMITTEE, SCIENTIFIC WORKING PARTY JUNE 20 AND 21, 1961 AT THE PERMANENT HEADQUARTERS OF NATO, PARIS, ed. by John H. Rust and D. J. Mewissen. New York, Elsevier, 1963. 155 p. (Elsevier Monographs; Medicine Section.)

THE FALLEN SKY; MEDICAL CONSEQUENCES OF THERMONUCLEAR WAR, ed. by Saul Aronow and others. New York, Hill and Wang, 1963. 134 p. (Edited for Physicians for Social Responsibility.)

"The first group of articles in this book was originally written by a group of physicians for the *New England Journal of Medicine* to describe for their fellow physicians the biological, physical, and psychological consequences of a thermonuclear attack." Also includes: The Illusion of Civil Defense, a speech given by Gerard Piel, publisher of *Scientific American*, at the Commonwealth Club in San Francisco in November 1961; The Biology of Nuclear War, by Dr. Bentley Glass, Professor of Biology at The Johns Hopkins University and a member of the National Academy of Sciences, which was presented to the National Association of Biology Teachers in December 1961 and was published in the October 1962 issue of *The American Biology Teacher*.

*FIRE AND FALLOUT: THE EFFECTS OF 'CLEAN' NUCLEAR WEAPONS, by Samuel J. Mason and William F. Schreiber. Cambridge, Massachusetts Institute of Technology, n.d. Various paging.

"The purpose of this paper is to contribute to the assessment of the life-saving potential of fallout shelters in nuclear war. It is recognized that uncertainties about the size and type of attack, the type of weapons used, climatic conditions, and other factors all would greatly influence such an assessment. Hence, . . . [the authors] have made calculations and organized their results in such a way that a large number of different situations may be ana-

lyzed. Part I of the paper sets forth the results. In Part II . . . [the authors] present applications to what appear to be the most likely situations. In Part II . . . [they] draw some conclusions and make some recommendations."

McGillivray, Peter C. FIRE STORMS NOT LIKELY IN THE UNITED STATES. International civil defense, no. 121/122, July/Aug. 1965: 3-4.

Critics of civil defense sometimes allege the futility of a shelter program on the basis that fire storms similar to those experienced in Japanese cities during U.S. bombing raids will incinerate everyone seeking protection during a nuclear attack. It has been found, however, that fire storms are possible only when "building density" is "at least 30% in areas of more than one mile square." Except possibly for several very old, large, eastern cities, municipal areas of the United States do not possess this characteristic. Frightening the public with the fear of fire storms "is familiar tactic of the civil defense critic who overdramatizes the hazard in an attempt to promote a spurious criticism of the shelter program." (Extracted from: Arms Control & Disarmament, v.2, no.2.)

THE GENETIC EFFECTS OF RADIATION: POSTATTACK CONSEQUENCES, by Norman Arnheim, Jr. Santa Monica, Calif., Rand Corporation, 1966. 22 p. (RM-5096-TAB.)

"Since the end of World War II many studies have been conducted in order to assess the degree and types of damage expected to result from radiation-induced mutations produce as a consequence of nuclear war. The discovery of many important genetic phenomena in recent years has revealed important information that can be of value in better determining the postattack consequences of newly induced mutations. This Memorandum analyzes these phenomena, integrating the new concepts into the total discussion of the genetic effects of radiation . . ."

"HISTORICAL TRENDS RELATED TO WEAPON LETHALITY. Washington, Historical Evaluation and Research Organization, 1964. 60 p.

A report prepared for the Advanced Tactics Project of the Combat Development Command, Headquarters U.S. Army, under Contract No. DA 30-069-AMC-647(X). The study requirements were: (1) To derive from history the characteristics of the interplay among major elements of military power; (2) To focus on cause, effect, and character of great

advances in weapon lethality; (3) To identify; (a) the origins of such advances, (b) the time lag between discovery of means and development of effective methods of employment, (c) the impact (if identifiable) on the existing balance of power; (4) To ascertain, and to analyze similarly, instance in which methods of operation have enhanced the lethality of existing weapons; and (5) To quantify increases in lethality where possible, in terms of casualty rates, or ranges, or dispersion or the like."

LONG-TERM RADIATION DAMAGE: EVALUATION OF LIFE-SPAN STUDIES, by Bernice Brown. Santa Monica, Calif., Rand Corporation, 1966. 66 p. (RM-5083-TAB.)

"The object of this exploratory study is to summarize and evaluate some of the published reports on animal response to whole-body radiation exposure. Measures of life shortening in animals are obtained from radiation experiments, and some methods of estimating the life shortening effect of man are explored. This review is made from the standpoint not of a radiobiologist but of a statistician concerned with the analysis of experimental data." References pp. 61-65.

THE NUCLEAR AFTERMATH, by Maj. Carl M. Guelso, in *National Defense Transportation Journal*, v.21, no.1 (January-February 1965) 33 plus.

The author provides "a detailed study of the effects of nuclear explosions designed to . . . [reduce] irrational fears concerning thermonuclear blast and fallout; charts will help . . . [in] Civil Defense community protection work . . . Preparation rather than panic, knowledge instead of fear, an assessment of the true magnitude of the nuclear warhead and its hazards are key ingredients in any survival formula."

NUCLEAR BLAST EFFECTS ON A METROPOLITAN ECONOMY, by William C. Truppner. Washington, Institute for Defense Analyses, Economic and Political Studies Division, 1965. 94 p. (DA/HQ 65-4208.)

"This Study is a detailed treatment of material summarized in IDA Research Report R-113, *The Effects of Nuclear Weapons on a Single City: A Pilot Study of Houston, Texas, September 1965*. It assesses weapons effects on economic resources and considers the postattack relationship between surviving population and resources. It emphasizes the method for assessing damage in a single city rather than the statistical results obtained from the pilot study." Tables.

NUCLEAR DISASTER, by Tom Stonier. Cleveland, The World Publishing Co., 1963. 225 p. (Meridian Books M154.)

"Beginning with a brief outline of the history and technology of the bomb, Dr. Stonier describes and analyzes the immediate damage, injuries, and death that would be caused by the explosion of a thermonuclear weapon—and the social and economic chaos that would result. He then examines the long-range effects, telling . . . what may happen to our children and to our natural environment . . . Equally important is the human response: how would people act when faced with nuclear disaster? . . . [Dr. Stonier provides examples.] Eyewitness accounts, as well as official military and scientific data, of the atomic bombings of Japan, postwar nuclear tests, the . . . fire bombings of World War II, the outbreak of the bubonic plague following the San Francisco earthquake, and other natural and military phenomena contribute to the construction of a . . . picture of the consequences of a thermonuclear war." With: appendices and bibliography.

PARAMETERS GOVERNING URBAN VULNERABILITY TO FIRE FROM NUCLEAR BURSTS (PHASE I), by R. H. Renner and others. San Francisco, Calif., U.S. Naval Radiological Defense Laboratory, 1966. 321 p. (OCD Work Unit No. 2532A; USNRDL-TR-1040.)

"The parameters governing the fire vulnerability of U.S. urban areas from nuclear bursts have been identified, defined, and evaluated in terms of their relative importance, interactions, and sensitivity characteristics. The results will be useful in fire-vulnerability studies. Comprehensive listing of parameters in decreasing order of importance is presented with the ranking of those parameter groups for the following seven categories of urban fire response; Type 1—Fire Vulnerability is Determined Primarily by the Extent and Number of Initial Fires Caused by Thermal Radiation . . . Type 2—Fire Vulnerability is Determined Primarily by Spread or Ultimate Magnitude of Fire . . . Type 3—Fire Vulnerability is Determined Primarily by Fires Resulting from Blast or Other Causes . . . Recommendations are made for further research into significant areas where major information gaps exist." Appendixes deal with target parameters, nuclear weapon burst parameters, etc. References.

THE SOCIAL AND PSYCHOLOGICAL EFFECTS OF NUCLEAR ATTACK AND THEIR IMPLICATIONS FOR RECOVERY OF SO-

CIETY, by Peter G. Nordlie, in *EMO National Digest*, v.7, no.1 (February 1967) 14-21.

"This paper reports on a program of research aimed at the study of the probable social and psychological effects of a nuclear attack." Dr. Nordlie states: "It is my purpose to review the efforts we have made to study the probable social and psychological phenomena of hypothetical post-attack situations and to suggest some of the major implications for societal recovery and civil defense planning that can be inferred from the results of these studies."

VULNERABILITY TO NUCLEAR ATTACK OF THE WATER TRANSPORTATION SYSTEMS OF THE CONTIGUOUS UNITED STATES, by Benjamin V. Andrews and Harvey L. Dixon. Menlo Park, Calif., Stanford Research Institute, 1964. 167 p. (SRI Project No. IMU-4536-421.)

Prepared for Office of Civil Defense, Department of the Army, under Contract No. OCD-OS-63-149.—"This report contains an analysis of the vulnerability of the U.S. domestic water transportation systems to nuclear attack. The basic analytical procedure was to develop inventory data, assess the damage to the inventory for a range of nuclear attacks, identify those parts of the water transportation systems that appeared most vulnerable to nuclear attack, and suggest means to reduce the vulnerability. This basic procedure was followed for the four major components of the water transportation systems: (1) waterways, (2) vessels, (3) terminals, and (4) personnel. Statistical data are provided in the appendixes for each of these components." With illustrations and tables.

4. *Arms Control and Civil Defense*

ARMS CONTROL AND CIVIL DEFENSE, ed. by D. G. Brennan. Harmon-on-Hudson, N.Y., Hudson Institute, Inc., 1963. 47 p. (HI-216-RR.)

Prepared under Contract ACDA/IR-10 for the U.S. Arms Control and Disarmament Agency.—"The report takes up the strategic impact of civil defense on arms control. Fallout shelter programs are shown to have some (not necessarily adverse) strategic implications for arms control, but the general strategic weakness of fallout shelter programs is illustrated by the absence of changes in U.S. strategic forces or plans attributable to the Soviet civil defense program. Both blast shelter programs and crisis evacuation programs can have much more important strategic implications for

arms control, and these are considered in detail. After setting forth a theory of arms control tendencies . . . , the report takes up the social, psychological, and political effects of CD. Many of the long list of claimed social and political shortcomings of CD have been rendered suspect by actual experience with ongoing CD programs. Some others, including especially claims that the public would perceive civil defense and arms control as psychologically incompatible, have been virtually disproved by public opinion poll data and other means. It is shown that some of the issues raised in the CD controversy cannot be finally resolved by systematic research . . . [The paper continues by taking up the] . . . topic of civil defense as arms control. After considering and generally dismissing as unattractive most of the possibilities for CD limitation agreements, . . . [the paper] studies . . . the possibilities of cooperative civil defense, i.e., of surrounding existing ongoing programs of CD with as much bilateral or international cooperation as can be achieved . . . The major positive recommendation of this report is that a cooperative framework be established around CD programs as rapidly as possible. The report ends with brief consideration of some special problems relating to NATO and then with a summary list of conclusions and recommendations."

Nash, Vernon. THE CASE FOR INTERNATIONAL CONTROL OF WEAPONS. *Current history*, v.47, Aug. 1964: 97-102, 115.

The terrible nature of nuclear weapons, the absence of an assured defense against them, and the possibility that nuclear war might occur are valid and pressing reasons for seeking international control of nuclear weapons. Although national sovereignty has its merits and must be respected, it seems unreasonable to preclude changes in the concept of sovereignty to make it more applicable to this nuclear era. The continued growth of the nuclear club, which means increased national responsibility—or irresponsibility—regarding the use of nuclear weapons, contributes to the likelihood of nuclear war and to the urgency for modification of the concept of national sovereignty. The world is becoming a geographical, technical, and social unit; interdependence is widely prevalent in relations among nations. "One physical world compellingly requires one political world." Unfortunately many have come to accept the inevitability of major losses in a nuclear war. Militarists speak of what is

"acceptable" and what is "unacceptable". The shelter program is inadequate at present, and a civil defense program that could save all of the population is impossible. Nevertheless the importance and necessity of civil defense provisions that will insure the survival of enough citizens to maintain and restore society to a reasonable level should not be overlooked. The accepted view seems to be, though, that the best defense against nuclear war is to prevent it. There is now less likelihood that preventive war and pre-emptive strikes will occur. There has been some easing of tension and cause for optimism. More is needed, however, in the nuclear era. An international organization with the power to control nuclear weapons is the only reasonable solution. Such an organization would include safeguards against the tyranny of a superstate. A "world of order under law" is conceivable and acceptable. Those who fear a world organization forget the principle of dual sovereignty and the success with which it has functioned. The United States should express its willingness to join all nations in disarmament and its faith in "internationalism" to enforce it. (Extracted from: *Arms Control & Disarmament*, V.1, No.1.)

RATIONAL DEFENSE: NUCLEAR DISPLACEMENT, by Charles E. Osgood, in *Bulletin of the Atomic Scientists*, v.18, no. 6 (June 1962) 21-24.

"It is a paradox of the nuclear age that ever increasing expenditures for national defense have been paralleled by ever decreasing security for our civilian population. The reason for this paradox lies in a fundamental fact about military technology: offensive capability has completely outstripped defensive capability. This situation has been forcing the United States and the Soviet Union inexorably toward the policy of mutual nuclear deterrence. But deterrence is more a psychological question than a technological answer. The opponent is assumed to be deterred from launching a nuclear attack by his expectation of unacceptable retaliation. But if he is not deterred—if our retaliation is not credible or his decisions are not rational—then all of the invulnerability and certainty of our nuclear second strike does nothing whatever to protect our own civilians. This is why there is now great pressure for some kind of civilian defense. Support of shelter building by the government is a tacit admission that the military establishment cannot, in any traditional sense, protect or defend the civi-

lian population if deterrence fails and war breaks out . . . In sum, then, a policy of nuclear displacement, accompanied by appropriate supporting actions, would both provide a rational answer to the question of civilian defense in a nuclear age and constitute a first step toward a more peaceful world in which defense against nuclear weapons is guaranteed by prevention of nuclear war."

C. THE ANTIBALLISTIC MISSILE (ABM) DEBATE

THE ABM DEBATE, by Lewis A. Frank, in *Military Review*, v.47, no.5 (May 1967) 45-52.

"The first live Chinese missile nuclear test and reports of recent Soviet efforts to close the 'missile gap' and open up an 'antimissile gap' against the United States are serving to reopen the long smoldering debate on the feasibility of improved active missile defenses for the United States—namely, the Army's Nike X antiballistic missile (ABM) . . . The most direct threat to the viability of the United States now, and in the foreseeable future, lies in the growing numbers of Soviet intercontinental ballistic missiles (ICBM's), estimated at 300 by England's Institute for Strategic Studies, and the phased introduction of the Serb sea-launched ballistic missile into the Soviet submarine fleet. The continuing Soviet buildup, coupled with undeniable Chinese intentions 'to create a nuclear force in the shortest possible time, make a discussion of the ABM central to both problems . . . On balance, it would seem that the US development of at least a light or anti-Chinese ABM system is justified by both the technical progress recently achieved in the design of such systems, by the need to know more about its performance utilizing the actual hardware, and by the necessity to provide active defenses against the growing Soviet and the emergent Chinese nuclear threats to be expected within the coming decade."

THE ANTI-BALLISTIC MISSILE DEBATE, by J. I. Coffey, in *Foreign Affairs*, v.45, no.3 (April 1967) 403-413.

"Although work on anti-ballistic missiles has been under way for some years, the prospects for their being really effective have in the past seemed relatively small . . . All in all, it is understandable that the United States did not deploy anti-ballistic missiles during the early sixties . . . However, in the past year or so, a number of developments have called that decision into question. . . . Technological

improvements in ballistic missile defenses make feasible the deployment of a system which could markedly reduce the damage from an attack of a given magnitude. This has led to suggestions for at least the partial or 'light' deployment of anti-ballistic missiles as a defense against lesser nuclear powers—and specifically against Communist China . . . Whatever the American decision with respect to deploying anti-ballistic missiles against Communist China, it is obvious that this may not be controlling; even should the United States refrain from building ballistic missile defenses, the U.S.S.R. might do so . . . The content of any new proposal will depend in part on the importance attached to arms control in general and ballistic missiles in particular . . . It would seem that the introduction of anti-ballistic missiles—regardless of who introduces them and for what reasons—is likely to have a significant impact on the current negotiations for arms control. . . . Judgments as to the desirability of building ballistic missile defenses will differ according to one's opinion as to the likelihood of war, one's desire to employ strategic forces as coercive instruments, one's theories on crisis behavior, and one's views as to how the Communists are likely to conduct themselves in the next decade. But whatever views one may have on the utility of A.B.M.s, one must acknowledge their disadvantages . . . On these grounds the whole issue of constructing ballistic missile defenses needs to be carefully thought through, by both the United States and the Soviet Union."

ANTIMISSILE DEFENSE TAKES SHAPE, by James Holahan, in *Military Review*, v.43, no.8 (August 1963) 60-65.

This article was digested from *Space/Aeronautics*, April 1963. During the next five years or so we can expect to see the development of the first family of antimissiles capable of destroying most types of attacking missiles in flight. The principal roles in the increased antimissile effort belong to the Department of Defense, the Army, the Advanced Research Project Agency, the contractors of these agencies, and to a much lesser extent, the Navy. Plans and systems are discussed.

ARMY REPORT, by John B. Spore, in *Air Force/Space Digest International*, v.1, no.4 (April 1965) 29-31.

"The U.S. has spent some \$2 billion on research for an antimissile missile and will spend even more although it is doubtful that an antimissile missile

or any other system of ballistic missile defense will ever be put into operational use. In analyzing why this is true, the U.S. air-defense missile system is reviewed, and the thinking of U.S. Secretary of Defense McNamara on such candidates for missile defense as the Nike-Zeus and the Nike-X—and how they fit into a need for an American civil-defense system—is reported in this . . . [report].”

THE BALANCE BETWEEN THE SUPER-POWERS; INTO STRATEGIC DEADLOCK, by Neville Brown, in *Military Review*, v.47, no.3 (March 1967) 70-79.

“Soviet nuclear fortunes reached a low point in 1962, for it was then that the Soviet Union was most exposed to the hazard of being effectively disarmed by an attack from her principal adversary. But the following year, she introduced into service a new type of intercontinental ballistic missile (ICBM), and with this she began to correct the imbalance . . . What are the implications of this strategic balance? One that is clear is that at no time over at least the next decade would the Soviet Union stand any chance whatsoever of knocking out the Titan and Minuteman force—let alone the Polaris—in any surprise attack, even if no attempt was made to fire the Titans and Minutemen while the Soviet ICBM's were in flight . . . As the deadlock has approached, the military establishments of the United States and the Soviet Union have come to resemble each other more closely. . . Two main patterns of East-West conflict can be envisaged in the years that lie ahead. One is the kind in which the Soviet Union threatens the selective use of missiles against particular Western Nations as she did during the Suez and U-2 crises: The best response would presumably be to threaten selective retaliation in kind. The other pattern of conflict is one in which some Western territory is seized. It is doubtful whether in this event a nuclear response would be appropriate . . . What might be more effective and more stable is some punitive policy that could assume a less violent form and one that the Communist powers would find it difficult to emulate.”

BALLISTIC MISSILE DEFENSE AND SOVIET STRATEGY, by Walter F. Hahn and Alvin J. Cottrell. Arlington, Va., Institute For Defense Analysis, 1963. 39 p. (Research Paper P-140.)

This paper is an outgrowth of Study SPHINX, a project on Soviet secrecy, supported by IDA Central Research. The general Soviet strategic

outlook; the theoretical role of ABM in Soviet strategy; internal constraints upon Soviet ABM development; Soviet actions thus far (pronouncements, allusions, etc., regarding Soviet ABM capability); exploitation vis-a-vis the United States; implications of Soviet ABM deployment for intra-bloc relations (Sino-Soviet relations in light of ABM); the ABM and Soviet objectives in third areas (NATO, Berlin, etc.); likely Soviet reactions to U.S. deployment of ABM (discussed are several alternatives).

BMD AND NATIONAL SECURITY, BY Charles M. Herzfeld, in *Survival*, v.8, no.3 (March 1966) 70-76.

“Dr Herzfeld is the Director of the Advanced Research Projects Agency in the US Department of Defense, and he has been involved with both the technical and the strategic aspects of the development of an American BMD system for some time. This article deals with some of the very difficult decisions this new technical possibility raises.” Dr. Herzfeld state that “A matter closely related to that of the deployment of the US defense against missiles is . . . the question of a deployment of such a defensive system by the Soviet Union. It is hardly possible to discuss the two questions independently.”

THE BRINK OF ANOTHER ARMS RACE? by Roswell L. Gilpatric, in *Survival*, v.9, no.4 (April 1967) 115-119.

Mr. Gilpatric, who was part of the U.S. Department of Defense from 1961-1964, “expresses here the deep concern that most thoughtful Americans feel about the political implications of BMD (Ballistic Missile Defense).” He discusses, military implications, political and economic issues, inherent danger of a new arms race, etc., as aspects for consideration in any decisions the U.S. Administration will make with regard to BMD.

CHINA AND BMD, by J. I. Coffey, in *Survival*, v.8, no.3 (March 1966) 80-84.

The editors of *Survival* state that “Those familiar with the American debate on the deployment of BMD will be aware of the significance attached to ABMs in neutralizing a possible threat to the United States. The Chief of the Office of National Security Studies of Bendix Systems Division here questions certain assumptions commonly made.” After discussing New Problems, Hypothetical Assumptions, Partial or Widespread Deployment, Pattern of Development, Clandestine Nuclear Weap-

ons, Further Sophistications, Unlikely Choices, and the Soviet Role, the author concludes that: "The advantages attributed to a partial American ABM deployment are largely conjectural . . . On the other side of the ledger one must place not only the cost of even a partial deployment, but also the larger consequences. To invest some billions of dollars, to risk stimulating Soviet ABM deployment, and to enter into a third round of the arms race on pre-suppositions about Chinese behaviour five and ten years hence seems somewhat extravagant—not to say extreme. At the very least this question of Chinese behavior should be given a searching look, since it is upon premises concerning attitudes and patterns of action that the arguments for an ABM system really depend."

THE COMPLEXITIES OF BALLISTIC MISSILE DEFENSE, by Bruce M. Russett, in *The Yale Review*, v.56, no.3 (Spring 1967) 354-367.

"Ever since the limited nuclear test ban, two growing clouds have come to dominate the horizon of national security policy: the spread of nuclear weapons, and the prospects for an antiballistic missile system, or ballistic missile defense . . . There is now a consensus both in government and in the wider national security community that major decisions on both will have to be taken before the end of the 1960's, and very possibly before the end of this year. One finds a high level of agreement as to what basically ought to be done about the spread of nuclear weapons (stop it!) even though there is much less common understanding of how to do it, or how to live with the situation if proliferation cannot be halted or drastically limited. The problem of ballistic missile defense, however, finds no agreement even at such an elementary level. Unfortunately the issue has emotional protagonists on both sides, each arguing in black and white terms without a common frame of reference. Often the debate is conducted on a very complicated set of considerations perhaps amenable in the end only to detailed and technical information of a sort available neither to the general public nor to those who aspire to a slightly more than trivial role in the formation of national policy. But an effort to understand at least what the basic considerations are is essential to useful debate. Furthermore, they are not irrelevant to the other major issue, nuclear proliferation. The political ramifications of building an American antimissile system will be widespread and extremely serious. This is a situation where cost and narrow military effectiveness, so well analyzed by current

techniques, must not be the sole criteria. There are sound political reasons for urging restraint, so the arguments should not be based on technical misapprehension."

CONGRESS, DOD RENEWING BOMBER CLASH, by George C. Wilson, in *Aviation Week and Space Technology*, v.82, no.9 (1 March 1965) 18-19.

"President Johnson and the Defense Secretary Robert S. McNamara are on another collision course with Congress and Air Force leaders on the question of whether Fiscal 1966 is the year to start full-scale development of the advanced manned strategic strike system (AMSS). Congress is expected to vote more money for ANSS than McNamara requested for Fiscal 1966, just as it did last year, and McNamara is expected to refuse to spend it, just as he did last year. . . ." Explains the reasoning behind the controversy over strategic reliance and points out that "while Defense Department under McNamara remains cool towards AMS, it is placing major strategic emphasis in the Fiscal 1966 budget requests upon the development of more advanced penetration aids for Air Force and Navy ballistic missiles in hopes of countering the possible emergence of an effective Soviet anti-ballistic-missile system." A service-by-service breakdown, in total obligational authority of planned major procurement requests in FY 1966 Defense Department budget, is included, and shows the types of aircraft and missiles to be procured.

DEFENSE AGAINST BALLISTIC MISSILES, by Freeman J. Dyson, in *Bulletin of the Atomic Scientists*, v.20, no.6 (June 1964) 12-18.

The central problem discussed is whether in any foreseeable circumstances the deployment of Ballistic Missile Defense (BMD) by the US would be necessary or advantageous to our security. The decision to deploy BMD must be considered as an indivisible one. The technical, military, and political factors involved in the decision cannot be clearly separated. However, for convenience sake the author makes such a separation in his discussion.

DOLLARS VS. LIVES—A U.S. CHOICE, in *U.S. News & World Report*, v.62, no.22 (29 May 1967) 44-48.

"How urgent is it for the U.S. to build a defense against Soviet missile attack—to try to save millions upon millions of American lives? That is the big debate boiling over between Defense Secretary McNamara and the Joint Chiefs of Staff. Congress,

too, is involved. Now one of the country's top nuclear scientists—a man who fought hard to put the H-bomb in the U.S. arsenal—questions, whether the U.S. is being led on a 'catastrophic' course." Dr. Edward Teller presents his views in this interview by the staff of U.S. News & World Report, ranging over the whole subject and also delving into: risk of nuclear war, Red China's weakness, the problem of espionage, expense involved, among others. Dr. Teller maintains that "The most cost-effective procedure is foresight. I strongly urge that we go ahead with an antiballistic-missile system . . . If we put ourselves into a stronger situation than Russia, we can greatly limit the chance that we shall be attacked at all."

HIGHER DOD SPENDING HINGES ON NIKE X, by Cecil Brownlow, in *Aviation Week and Space Technology*, v.82, no.5 (1 February 1965) 18-23.

The article includes charts that show: US Military Research Contracts in Fiscal 1966 (military sciences, aircraft, missiles, astronautics, ships, ordnance, etc.); How defense budget is apportioned FY 1961 through FY 1966 (Military Assistance; Strategic Retaliatory Forces; General Purpose Forces, etc.); Distribution of Military Forces (Actual 1961-1964; Estimated 1965-1966 Army, Navy, and Air Force Strategic Retaliatory Forces; Continental and Air Defense Missile Forces; General Purpose Forces; Airlift and Sealift Forces, etc.).

MCNAMARA REPORTS ON DEFENSE POSTURE, in *Congressional Quarterly Weekly Report*, v.25, no.5 (3 February 1967) 163-165 plus.

"The Senate Armed Services and Senate Appropriations Subcommittee on the Department of Defense (meeting in joint session) held hearings January 23-27 and January 30-February 2 on two administration bills: S666, authorizing \$45 billion in supplemental fiscal 1967 appropriations for Defense Department procurement, research and development and military construction; and S666, authorizing appropriation of \$19.2 billion in fiscal 1968 Defense Department procurement and research and development. Secretary of Defense Robert S. McNamara January 25 presented his defense 'posture statement,' an annual review of U.S. defense policy. . . . McNamara devoted a major section of his posture statement to setting forth arguments against installation of an antiballistic missile (ABM) defense system. Essentially, his argument was that deployment of such a system would force the Soviet

Union to escalate its defense expenditures, and that neither side would gain security . . . McNamara emphasized . . . that damage-limiting programs 'no matter how much we spend on them, can never substitute for an assured destruction capability in the deterrent role' . . . [Concerning shelters, the Secretary of Defense] said that by June 30, about 160 million fallout shelter spaces meeting minimum standards would have been identified, of which 97 million would be marked and 87 million would be stocked with supplies."

NIKE-X; BIG CHIP IN THE DEADLY GAMBLE ON NUCLEAR EXCHANGE, by Lloyd Norman, in *Army*, v.17, no.3 (March 1967) 25-34.

"Defense Secretary McNamara says: 'We have concluded that we should not initiate an anti-ballistic missile at this time.' The Chairman of the Joint Chiefs of Staff, General Earle G. Wheeler, has said: 'I must say that the Joint Chiefs of Staff agree that it would be desirable from the viewpoint of our overall strategic posture to have an antiballistic missile system.' Our government has confirmed the news that the Soviet Union is erecting a ballistic missile defense system. One segment will defend Moscow and another will provide a curtain of ABM fire along the northern edge of European Russia to shoot down U.S. intercontinental ballistic missiles following over-the-north-pole trajectories . . . [This article presents] a thorough and up-to-date account of the issues . . . by Lloyd Norman who has covered the ABM story since the mid-1950's . . . [This article is followed] with excerpts [pp. 34-38] from Mr. McNamara's current five-year posture statement, as released to the public on 23 January. The Association of the U.S. Army has long supported 'the earliest practicable production and deployment of an ABM defense system.' [The editors state] That this should be the year for a good beginning will become clear as the story unfolds."

NIKE-X DEVELOPMENT REMAINS EXPLOSIVE, in *Armed Forces Management*, v.13, no.7 (April 1967) 66-69.

"NIKE-X remains a highly explosive question . . . in Congress and throughout much of the land despite the painstaking and detailed analysis Defense Secretary McNamara goes to in explaining why the department has decided against its deployment at this time. Here is a comprehensive report dealing with McNamara's thinking on deployment of an Anti-Ballistic Missile (ABM) system, and how he

arrived at his decision, plus a complete breakdown of just what hardware goes into making up the NIKE-X system, together with a look at what the U.S. is doing, overall, in the area of 'Civil Defense.'

NUCLEAR STRATEGY AND THE ARMS RACE, by Col. Richard C. Bowman, in *Air Force and Space Digest*, v.50, no.4 (April 1967) 44 plus.

"Our 'Assured Destruction' strategy, the author contends, may need to be changed. It might tempt the USSR to try covertly to become strategically superior through a combination of more warheads and ABMs, inasmuch as the Soviets know we will build only as many missiles as we determine are needed for 'assured destruction.' If, instead, we base our strategy on being able to deny the Soviets any relative advantage, they would have to give up all thought of a first-strike . . ."

THE ROLE OF MISSILE DEFENSE IN SOVIET STRATEGY, by John R. Thomas, in *Military Review*, v.44, no.5 (May 1964) 46-58.

"The Soviets have always appreciated the political utility of military arms. Hence the antimissile missile (AMM), like the other major weapon systems, has not been and will not be considered in a political and economic vacuum." The discussion by the author suggests "that the Soviet Union's foreign policy may require massive AMM capabilities, if those capabilities are needed to enhance the image of Soviet military power as a deterrent force. The Soviet Union's strategy also may allot a major role to the AMM should her foreign policy misfire, forcing her to fight a war. The AMM will impose a severe strain on the Soviet economy, with resultant internal political consequences. The experience and subjective attitude suggest that the Soviets are likely to pay the price, given their expectations about the AMM's political and military utility."

SOVIET STRATEGY, by Field Marshal Malinovsky, in *Survival*, v.4, no.5 (September-October 1962) 229-232.

(From *Kommunist*, July 1962.) Marshal Malinovsky's first major statement on Soviet strategy since the 22nd Party Congress. He states the current Soviet view of (1) the requirements of deterrence, and (2) of how a modern nuclear war should be fought. He makes references to the role of missiles, the need for mass-armies, problems of anti-missiles, and disarmament and inspection.

D. CIVIL DEFENSE PREPAREDNESS AS A

MEASURE OF U.S. NATIONAL SECURITY (See Also Appendixes)

DETERRENCE AND SHELTERS, by J. David Singer, in *Bulletin of the Atomic Scientists*, v.17, no.8 (October 1961) 310-315.

"The actual lifesaving potential of proposed civil defense shelters is far from enough to compensate for the dangers they provoke by inhibiting the serious search for nonmilitary alternatives to international conflict; promoting fatalism about nuclear war; and, because of the time needed to reach metropolitan shelters, suggesting to the USSR that we are contemplating a first strike . . . It would seem that a civil defense program would enhance neither our deterrent against direct attack nor against nuclear diplomatic blackmail." In this discussion the author deals also with: Soviet Responses to Civil Defense; and Civil Defense in the Soviet Union.

THE LEGACY OF HIROSHIMA, by Edward Teller and Allen Brown. Garden City, N.Y., Doubleday, 1962. 325 p.

Aside from the various aspects of peace and war in the nuclear age, the authors also delve into the subject of survival and in this connection they state (pp. 252-253): "Shelters and equipment will not be enough for survival. We must have organization. All of our people should participate in a civilian defense training program. This is of the greatest importance. Every citizen must understand and practice civilian defense. Either a limited or an all-out nuclear war would require the services of only highly trained, professional soldiers. General mobilization of manpower would be ineffective, unnecessary, and impossible. Instead of being available for conscription into the Armed Forces, our people should be drafted into civilian defense organizations. All should be trained in civilian defense fundamentals: All must know how and where to seek shelter. Once inside a shelter, our people must know how to organize for the safety of the group. They must be trained to follow the directions of a shelter leader and a shelter doctor. They must be trained to operate communications and air-filtering equipment. Before they can hope to emerge safely from the shelter, they must know how to measure radioactive contamination, and they must know how to wash it away. An all-out nuclear attack upon our country would be terrible indeed. I do not believe it will come. But if it should come—and if we were prepared to shelter ourselves from its effects, if we are equipped and organized for survival—even an all-out nuclear

attack would be no worse than some of the terrible events of the past wars . . ."

MORE IMPORTANT THAN SHELTERS, by Bernard T. Feld, in *Bulletin of the Atomic Scientists*, v.18, no.4 (April 1962) 8-11.

The author feels that the more important problem facing our country is not so much the feasibility of civil defense but rather the relationship of our government's policy on civil defense to our national policy on the possible use, or nonuse, of nuclear weapons. His point is "that civil defense must be considered as but one aspect of this broader problem and that . . . the civil defense issue can only be sensibly resolved in the context of the broad question of American policy on nuclear war." The author's "abbreviated analysis of the 'present' military situation has tried to summarize the major issues with which the U.S. government is . . . faced and to indicate the most important arguments which must be considered for their resolution. Minor emphasis has been placed on the problem of civil defense, because . . . [the author regards] this as a peripheral problem. The overriding issue is the decision regarding the role of nuclear weapons in the solution of 'current' East-West conflicts."

***THE NATIONAL PLAN FOR EMERGENCY PREPAREDNESS**. Washington, Executive Order of the President, Office of Emergency Planning, December 1964. 128 p.

"... Sets forth the basic principles, policies, responsibilities, preparations, and responses of civil government to meet any kind of national defense emergency . . . describes the roles of the Federal Government, the States and their political subdivisions and, as appropriate, nongovernmental organizations and individual citizens." This Plan supersedes the **NATIONAL PLAN FOR CIVIL DEFENSE AND DEFENSE MOBILIZATION** (October 1958) and all of its annexes and appendices. Chapters are devoted to the description of: basic principles; Civil Defense; welfare; health; manpower; transportation; telecommunications; food; water; fuel and energy; minerals; resource management; economic stabilization; production; housing; government operation. Appended: Index of authorities which indicates the principal Federal Statutes and Executive orders concerned with emergency preparedness.

NONMILITARY DEFENSE FOR THE UNITED STATES; STRATEGIC, OPERATIONAL, LEGAL AND CONSTITUTIONAL AS-

PECTS, by William K. Chipman. Madison, Wisc., University of Wisconsin, National Security Studies Group, 1961. 613 p.

This study is organized in three parts. "The first deals with the strategic problem of whether nonmilitary defense is necessary and with the issue of whether, if it is necessary, it is possible. It deals too with most of the objections commonly raised against more than the present token program. The second part sketches the systems required for effective nonmilitary defenses, picking out the legal or constitutional problems raised by developing them. In the third part are discussed the constitutional and legal problems which must be resolved before the country is likely to have anything approaching useful defenses. Most of these require reenactment of civil defense and defense mobilization legislation. A few require constitutional amendment." With extensive bibliography.

NUCLEAR DETERRENT WITH OUT-MODED CIVIL DEFENCE? by Col. Horst von Zitzewitz, in *NATO's Fifteen Nations*, v.8, no.4 (August-September 1963) 72-76 plus.

"Lessons drawn from the Cuban crisis for the nonmilitary defence of the North American continent." The author states that this article "will serve to demonstrate that even the two neighbours on the North American continent, whose military and air defences in the Atlantic area have been combined and integrated in NATO and NORAD respectively, are following their own, completely separate and diverging ways at the present time with regard to measures for the survival of state and people." He discusses: Civil Defence Today in North America (Canada and the United States); The Military Defence of the "North American Atomic Stronghold"; Canada's Modern "Army without Weapons"; Civil Defence at Zero Hour; Is Civil Defence Not a Deterrent? The author concludes that, in his opinion, "civil defence does indeed constitute a real deterrent. However,—and again with reference to North America—it can be a deterrent only if non-military defence reaches the same high standard in both states of the continent. For a nuclear attack would not be directed at either Canada or the USA alone, but at the continent as a whole. In this age of nuclear missiles it is time people stop thinking and acting in accordance with outmoded national schemes for civil defence—and that holds good for Europeans as well."

PEACE THROUGH CIVIL DEFENSE; WE

NEED UNITY IN THE FREE WORLD, by Edward Teller, in *Vital Speeches of the Day*, v.28, no.8, (February 1962) 244-246.

Dr. Teller states: "I believe that we are peace loving—that with the exception of a small and insignificant minority . . . We are all peace loving and this includes our military men . . . I also believe . . . that there are a great majority of peace loving people behind the Iron Curtain, but I believe . . . that . . . [they] have no voice, and the minority, in Russia, is determined to conquer the world . . . I believe they are cautious—I do not believe that they are adventurous, and I do not believe that they will attack us as long as we are strong. I believe for this reason that we must be strong and patient; that we must never strike first, but we must be able to retaliate in case we are attacked, and furthermore, we must be able to survive an attack so that it should become clear . . . to the Russian leaders—that by attacking us they cannot win . . . I do not believe that civil defense is a panacea. I do not believe that civil defense will come easy. It will be hard to have a good civil defense, but it is necessary and it is possible."

PLAN FOR SURVIVAL, by Edward Teller and Allen Brown, in *Saturday Evening Post*, v.235, no.5 (3 February 1962) 11-15, no. 6 (10 February 1962) 34-36, no. 7 (17 February 1962) 32 plus.

This three-part article on A Plan for Survival in the Nuclear Age generally deals with nuclear-test bans, with fallout and how it affects life on earth, and with cold-war strategy. The concluding part states that "as long as the United States is unprepared to absorb and survive an all-out attack, the Communists have a temptation that might prove irresistible." The authors offer four suggestions that "will very nearly guarantee our national safety and future . . . [The first of the four suggestions] Develop an adequate passive defense in the form of shelters, civil defense organizations, and means of rehabilitating the nation after attack. A nuclear attack on the United States would be horrible beyond imagination, but we must not only imagine it—we must prepare for it. An unprepared nation invites attack. Properly prepared, we can survive . . ."

"SOME COMMENTS ON CIVIL DEFENSE, by Herman Kahn. White Plains, N.Y., Hudson Institute, 1962. 26 p.

Excerpts from Chapter III of Thinking About the Unthinkable. "Today civil defense is likely to be ineffective in contributing either to traditional military objectives or to our present main objective—

avoiding war . . . Cities and the people in them cannot be considered the high-priority first-strike targets they were in World War II . . . The case for civil defense today does not rest upon the contribution it can make to the war effort. Nor does it rest upon any possible strengthening of our ability to deter a Soviet attack . . . Therefore, the real question about the performance of a civil defense program is, 'are there plausible circumstances in which feasible civil defense measures can provide a material degree of protection to lives and property and facilitate recuperation after a war is over?' The answer . . . is undoubtedly 'yes' . . . In the event of a war, civil defense measures could not only save millions of lives but could also prove critical to the continued survival in the world of Western ideals and institutions."

SOME REFLECTIONS ON CIVIL DEFENSE, by Marvin E. Rozen, and CIVIL DEFENSE IN A BALANCED NATIONAL SECURITY, by Stewart L. Pittman, in *Bulletin of the Atomic Scientists*, v.20, (June 1964) 21-26.

"The topic of civil defense is once again [at the time of writing of these articles] timely. Currently in progress are discussions whether the Nike-X anti-missile should be widely deployed, and the pros and cons of that debate closely parallel those of the civil defense argument. It is moreover a common feeling that such deployment should be accompanied by a system of shelters giving, at the very least, fallout protection to the inhabitants of the 'protected' cities . . . That there is widespread disagreement about civil defense . . . is good evidence that the problem is complex. In . . . [these two articles] there is a sophisticated discussion of each side of the question. Professor Rozen, writing as a concerned citizen, is impressed by the probability of undesirable side effects from a large civil defense program. Mr. Pittman, who . . . [had] headed the federal civil defense agency, supports administration efforts with the contention that the program . . . considered would not be large enough."

STATEMENT OF SECRETARY OF DEFENSE ROBERT S. McNAMARA BEFORE THE HOUSE ARMED SERVICES COMMITTEE THE FISCAL YEAR 1964-68 DEFENSE PROGRAM AND 1964 DEFENSE BUDGET. Washington, Department of Defense, Office of Civil Defense, January 1963. 163 p.

In his CD portion of the statement before the Committee, the Secretary of Defense pointed out that although Civil Defense is presented as a separ-

ate program, it is actually an integral part of "our over-all defense posture and its size and character are intimately related to those of our defensive forces. Indeed, as I noted earlier, in some wartime situations a reasonable Civil Defense program could do more to save lives than many active defense measures. To cite just one example, the effectiveness of an active ballistic missile defense system in saving lives depends in large part upon the availability or adequate fallout shelters for the population." Earlier in his testimony, Secretary McNamara stated: "The effectiveness of an active ballistic missile defense system in saving lives depends in large part upon the existence of an adequate civil defense system. Indeed, in the absence of adequate fallout shelters, an active defense might not significantly increase the proportion of the population surviving an all-out nuclear attack. For this reason, the very austere civil defense program recommended by the President, which I will discuss later, should be given priority over any major additions to the active defenses." Other sections of the Secretary's statement deal among others, with: strategic retaliatory forces; continental air and missile defense forces; and assessment of the international situation as it bears on military policies and programs.

STATEMENT OF SECRETARY OF DEFENSE ROBERT S. MCNAMARA BEFORE THE HOUSE ARMED SERVICES COMMITTEE ON THE FISCAL YEAR 1965-69 DEFENSE PROGRAM AND 1965 DEFENSE BUDGET. Washington, Department of Defense, Office of Civil Defense, January 1964. 171 p.

In his statement before the Committee, the Secretary of Defense indicated: (1) That a properly planned nationwide fallout shelter program would contribute far more to the saving of lives per dollar than an increase in MINUTEMAN missiles "beyond the level we recommend" and (2) that even if the Soviets were to attack only our military installations, without, and adequate fallout shelter program, fatalities from fallout would be very high—about three times higher than they would be with an adequate civil defense program. The portion of the Secretary's statement may be found in Chapter X of the document and deals with: shelter survey and marking; shelter development; shelter in Federal buildings; shelter provisioning; warning; emergency operations; financial assistance to States; research and development; management; public information; training and education; financial summary. Other sections of the Secretary's statement deal (among

others) with: assessment of the international situation as it bears on military policies and programs; strategic retaliatory forces; continental air and missile defense forces.

STRATEGIC AND TACTICAL ASPECTS OF CIVIL DEFENSE WITH SPECIAL EMPHASIS ON CRISIS SITUATIONS: FINAL REPORT, by William M. Brown. Harmon-on-Hudson, N.Y., Hudson Institute, 1963. Various paging. (HI-160-RR.)

Prepared under Contract No. OCL NS-62-18 for the Department of Defense, Office of Civil Defense.—"This report is structured in the . . . [following] manner . . . to consider some crisis aspects of civil defense systems: Chapter I—Methodological Considerations; Chapter II—General Context for Crisis Planning; Chapter III—Strategic Aspects of Civil Defense; Chapter IV—Civil Defense Tactics in Crisis Situations; Chapter V—A Preliminary Feasibility Study of One Civil Defense Tactic. The report attempts to (1) provide a broad context for civil defense; (2) give specific hints and directions towards possible solutions of some important civil defense problems; and, (3) study the feasibility of one specific civil defense tactic (i.e., strategic evacuation)."

STRATEGY FOR SURVIVAL, by Thomas L. Martin, Jr. and Donald C. Latham. Tucson, The University of Arizona Press, 1963. 389 p.

"This book is a . . . summary of available facts on civil defense and thermonuclear war woven together into a coherent picture of the total problem. The first purpose of the book is to show that these facts prove that civil defense preparedness is both necessary and practical; that all of the necessary technical knowledge is available to provide an adequate and economically feasible system of protective shelters. The second purpose is to show that a civil defense system will require a very long time for completion. The potential dangers of thermonuclear war in the decade ahead are sufficiently real to warrant a vigorous national program of civil defense now. Otherwise protection will not be available when or if it is ever needed. Finally, the third purpose of this book is to show that there are many varieties of civil defense situations so that the character of the technical problems may vary from one locale to another. The facts establish clearly, however, that there is no community civil defense situation so potentially desperate that it cannot be solved by known engineering problems." With: technical appendices; and references and selected readings.

SURVIVAL IN THE NUCLEAR AGE, by Eugene M. Enme, in *Air Force and Space Digest*, v.43, no.1 (January 1960) 48-50.

"A World War III sneak attack could cripple the nation. Only total war capabilities, including preparedness in the area of nonmilitary defense, can ensure America's survival in the nuclear age... Nonmilitary defense, an old-new factor of national strength, may be the key to both national and individual survival in the event of future war. Global aerospace delivery systems and nuclear firepower have shrunk the world into a single arena for political action—or the extreme of open hostilities. In the future, the front lines could be on the home front. These facts have brought new appraisals, official and unofficial, in the area of nonmilitary defense, which includes civilian defense. The process appears to have taken place on both sides of the Iron Curtain." Dr. Enme concludes his discussion by showing how "the problem of civil defense differs in the USSR from that in our own nation."

URGENT NATIONAL NEEDS. ADDRESS OF THE PRESIDENT OF THE UNITED STATES, DELIVERED BEFORE A JOINT SESSION OF THE SENATE AND THE HOUSE OF REPRESENTATIVES RELATIVE TO URGENT NATIONAL NEEDS, MAY 25, 1961. Washington, Government Printing Office, 1961. 14 p. (87th Congress, 1st Session, House of Representatives, Document No. 174.)

On pp. 9-10, President Kennedy dealt with civil defense, in which he states that "One major element of the national security program which this Nation has never squarely faced up to is civil defense... This administration has been looking very hard at exactly what civil defense can and cannot do. It cannot be obtained cheaply... The history

of this planet is sufficient to remind us of the possibilities of an irrational attack, a miscalculation, an accidental war which cannot be either foreseen or deterred. The nature of modern warfare heightens these possibilities. It is on this basis that civil defense can readily be justified—as insurance for the civilian population in the event of such a miscalculation. It is insurance we trust will never be needed—but insurance which we could never forgive ourselves for forgoing in the event of a catastrophe."

WE NEED CIVIL DEFENSE, by Anthony G. Priest, in *Ordnance*, v.45, no.246 (May-June 1961) 791-793.

"The lack of passive protection for our civilian population will make the United States an inviting target for enemy nuclear bombs in the event a future conflict should degenerate into an all-out war... Under the modern concept of 'total war' the civilian population is in as much danger as the armed forces, and the lack of an even elementary protection for U.S. citizens makes them an inviting target to enemy attack. Civil defense without shelters is like an air force without airplanes," writes Anthony G. Priest, who also points out that fireproof buildings would save many lives even in peacetime.

* **WHY CIVIL DEFENSE**, by Eugene P. Wigner, in *The Technology Review*, (June 1964) 21-23 plus.

"Proposals for civil defense raise questions regarding both what can be accomplished and the concomitant effects. The present discussion... [is] concerned only with the concomitant effects." The author considers, "first, the effects of civil defense preparations in case of a nuclear conflict; then, the effects of such preparations during a period of peace which may or may not be terminated by a conflict; and finally, the effects of civil defense preparations on the likelihood of a conflict."

II. Civil Defense and the American People

A. GENERAL PUBLIC: ATTITUDES AND RESPONSE See Also (Section IV-B-J)

AMERICANS' VIEWS ON CIVIL DEFENSE IN THE COLD WAR CONTEXT: 1966, by Jiri Nehnevajsa. Pittsburgh, Pa., University of Pittsburgh, 1966, 142 p

(O'D-08-63-48. "This report examines Americans' views on civil defense in the cold war context, based on the 1966 Survey on Civil Defense and Cold War Attitudes conducted on behalf of the University of Pittsburgh by the National Opinion Research

Center of the University of Chicago. This national block sample of 1,497 Americans were interviewed in February and March, 1966..." The data show that "All along, Americans have been highly supportive of civil defense and actual expressions of opposition have remained at around the ten percent level." I. Introduction; II. National Survey of 1966; III. International Context (A. Patterns and Meaning; B. Tabular Presentation of Data; C. Evaluation of Specific Issues); IV. Civil Defense (A. Patterns and Meaning; B. Tabular Presentation of Data; C.

Evaluation of Specific Items); V. Concluding remarks.

THE 1964 CIVIL DEFENSE POSTURES: PUBLIC RESPONSE, by Martha Willis Anderson. Pittsburgh, Pa., University of Pittsburgh, Department of Sociology, 1965. 71 p.

OC'D-OS-63-48. Research Subtask 4812B. "This report is one in a series of topical reports based on the results obtained from the national opinion surveys conducted for OC'D-OS-63-48. *STUDIES OF CIVIL DEFENSE AND COLD WAR ATTITUDES*. These surveys, based on national probability samples, focus on relevant public attitudes, opinion, information and behavior concerning ongoing and prospective Civil Defense efforts and the Cold War environment to which these Civil Defense efforts are a response."

NO ROOM IN BOMB SHELTERS, by G. Gerasimov, in *International Affairs (Moscow)*, no.8 (August 1963) 116-118.

A review of AMERICA IN HIDING, by Arthur I. Waskow and Stanley L. Newman. New York, Ballantine Books, 1962. 160 p. The reviewer opens with the statement: "Common sense has triumphed over mass hysteria: the American atomic bomb shelter programme is a fiasco," then proceeds to ridicule the entire US shelter program on the premise that there is no defense against H-bombs and that in the first place the whole thing was a "war scare" and a "phony." Speaking for the authors, the reviewer brings out the point that "Americans soon realized that peace was the best safeguard," and hopes that their experiences with the US Civil Defense program will result "in the creation of a large and vigorous peace movement."

Perry, Joseph B. A NOTE ON CONFIDENCE IN CIVIL DEFENSE. *Southwestern social science quarterly*, v.4, Sept. 1965: 141-145.

The confidence "expressed by a selection of students in the ability of Civil Defense to provide protection in case of nuclear attack" was analyzed. Females tended to express more confidence in civil defense than did males, while the Negro respondents showed a significantly higher amount of confidence than the white students. Most of those included in the sample assumed that the American civil defense program would provide at least "a little protection" from nuclear attack, while only a fairly small minority felt civil defense to be totally useless. Survival was seen as partially the result of the respondents' own efforts. Although most favored building private

fallout shelters, only seven of the respondents had actually done so. Very few of them, in fact, had even gone so far as to study the problems of survival in a nuclear attack. A significant measure of general attitudes toward civil defense was not obtained through this study; it did, however, provide support for previous findings that the general public is poorly informed about nuclear war and has made little effort toward self-protection. (Extracted from: *Arms Control & Disarmament*, v.2, no.1.)

SUMMARY OF STUDIES OF PUBLIC ATTITUDES TOWARD AND INFORMATION ABOUT CIVIL DEFENSE, by Ralph L. Garrett. Washington, Office of Civil defense, Research Directorate, Systems Evaluation Division, 1963. 33 p. (Research Report No.8.)

"This is a synoptic report on the state of public opinion, levels of knowledge, and attitudes toward civil defense. It will summarize the results of four surveys conducted in 1962 and will provide a brief background statement of our past survey research program."

B. CONFERENCES AND SYMPOSIA

CIVIL DEFENSE: A SYMPOSIUM PRESENTED AT THE BERKELEY MEETING OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE, DECEMBER 1965, ed. by Henry Eyring. Washington, American Association for the Advancement of Science, 1966. 136 p. (Publication No. 82.)

"The place of civil defense in the total picture of war and peace is one of the most important and controversial problems confronting the American public today. A major question at issue is whether or not an extensive shelter building program will diminish or increase the possibility of a catastrophe in nuclear war. But the questions cannot be discussed intelligently without knowledge of a number of facts that only the scientific community can provide. In order to inform fellow scientists and citizens about some of these points, the Committee on Council Affairs of the American Association for the Advancement of Science organized a symposium that was held at the Berkeley meeting of the Association in December 1965. Scientists who had studied problems related to modern warfare and passive civil defense systems reported their findings on these subjects..." The book contains the papers presented at the symposium as follows: The Basic Case for Civil Defense, by Fred A. Payne, Marquardt

Corporation; Civil Defense as Insurance and as Military Strategy, by Wolfgang K.H. Panofsky, Stanford University; The Effect of Civil Defense on Strategic Planning, by Owen Chamberlain, University of California; The Possible Effectiveness of Civil Defense, by Eugene P. Wigner, Princeton University; Medical Aspects of Civil Defense, by Victor W. Sidel, Physicians for Social Responsibility; The Agricultural Problems in Civil Defense, by John H. Rust, University of Chicago; Feasibility of Biological Recovery from Nuclear Attack, by Barry Commoner, Washington University. Also included are the statements of participants in the Panel Discussion (Anatol Rapoport, Fred A. Payne, Eugene P. Wigner, Victor W. Sidel, John H. Rust, Barry Commoner, and Edward Teller—the latter addressing himself to the question: Is Civil Defense the Way To Prevent War?).

CONTRACTORS SYMPOSIUM. Washington, Office of Civil Defense, 1962. Various paging.

The symposium was held in Park Arlington Motel, Arlington, Virginia during May 9, 10, and 11, 1962. The purpose of the symposium was: (1) to help orient contractors to the needs of CD's research and operational program; (2) to provide communication media so that contractors could present their views, and (3) to provide contractors the opportunity to make suggestions about useful areas for further investigation. Fifteen contractors participated.

THE 1961 GOVERNORS' CONFERENCE AND CIVIL DEFENSE. Washington, Executive Office of the President, Office of Civil and Defense Mobilization, 1961? 9 p.

Includes: Report of the Committee on Civil Defense; Resolution on Fallout Protection and Civil Defense; President Kennedy's remarks on civil defense before a Joint Session of the Senate and the House of Representatives, May 25, 1961.

NONMILITARY DEFENSE: CHEMICAL AND BIOLOGICAL DEFENSES IN PERSPECTIVE. Washington, American Chemical Society, 1960. 100 p. (No. 26 of the Advances in Chemistry Series.)

"A Collection of papers comprising the Symposium on Nonmilitary Defense, presented before the Division of Industrial and Engineering Chemistry in participation with the Special Board Committee on Civil Defense, at the 137th Meeting of the American Chemical Society, Cleveland, Ohio, April 1960."

*PANEL DISCUSSION ON CIVIL DEFENSE.

AMERICAN NUCLEAR SOCIETY ANNUAL MEETING, JUNE 23, 1965, GATLINBURG, TENN. Oak Ridge, Tenn., Oak Ridge National Laboratory, 1965. 45 p. [ORNL-3865, UC-2-General, Misc., and Progress Reports, TID-4500 (44th ed.).]

Participants: A. M. Weinberg, Director, Oak Ridge National Laboratory; D. F. Covers, Professor of Law; T. T. Stoner, Associate Professor of Biology; T. B. Taylor, Dep. Director for Scientific Affairs, Defense Atomic Support Agency; and E. P. Wigner, Professor of Physics. The pros and cons of civil defense were discussed, recognizing that "The question is partly technical (Is civil defense technically feasible?), partly political (Is civil defense politically feasible?), and partly emotional (Is civil defense desirable?)."

SCIENTISTS AND CIVIL DEFENSE: DIALOGUE AT BERKELEY, by John Walsh, in *Science*, v.151, no.3706 (7 January 1966) 53-57.

"Since the limited test-ban treaty went into effect in 1963, civil defense as an issue of public policy has lain practically dormant. A symposium on civil defense at the AAAS [American Association for the Advancement of Science] meeting... [in January at Berkeley, Calif.] may have anticipated the revival of debate, since a decision on deployment of antiballistic missiles is said to be imminent in Washington and an expanded civil defense program is viewed as an integral part of an ABM system. The symposium was conceived... as a means of meeting the scientific community's 'duty to provide our fellow citizens with an objective account of the technical data relevant to the grave issues of public policy on war and defense.'... Takeoff point for the symposium may be said to be the Project Harbor report produced by a summer study group at Woods Hole in 1963... The full report was not widely circulated, but a summary published by the Academy, was made generally available. A 'preliminary statement' included in the summary, which appears to have attracted more attention than anything else in it, said that the present limited civil defense program was 'considered to represent a minimum level of significant protection below which a national effort may not be justified at all.' A more adequate program, which was generally favored by the participants in the study, would include (1) shelters in target areas that are capable of protecting against blast and fire, (2) stockpiling of necessary supplies and hardening of critical facilities along with intensive planning to accelerate recovery, and (3) sub-

stantially greater federal involvement in the program in an effort to improve professional competence and coordination of operations."

THE SHELTER-CENTERED SOCIETY, by Arthur I. Waskow, in *Scientific American*, v.206, no.5 (May 1962) 46-51.

"This article is a condensed version of the report of a conference on the potential implications of a national civil defense program, held by the Peace Research Institute in Washington, D.C., on January 13 and 14 [1962]. Partial support for the conference was given by the National Institute of Mental Health and the American Psychological Association . . . The conferees were Raymond A. Bauer . . . Urie Bronfenbrenner . . . Morton Deutsch . . . Herbert H. Hyman . . . Erich Lindemann . . . David Riesman . . . Stephen B. Withey . . . and Donald N. Michael . . . All the conferees . . . [were] in essential agreement on the substance of the report." These social scientists reflected "on the unprecedented effects of a large-scale peacetime civil defense program and . . . [presented] some urgent questions for the consideration of other citizens."

U.S. AIR FORCE VIEW ON CIVIL DEFENSE PRESENTED AT STATE DIRECTORS' MEETING, by John Wampler, in *Civil Defense Bulletin (Australia)*, v.8, no.2 (April 1966) 9-15.

"Mr. John Wampler, Program Control Officer for the U.S. Air Force's Directorate of Operations in the Pentagon, addressed the full meeting of the National Association of State Civil Defense Directors on November 17, 1965, at Phoenix, Arizona. This is the text of . . . [his] address . . . In the Air Force, civil defense is considered an operational requirement. Primary responsibility for it is assigned to the Director of Operations, Headquarters, U.S. Air Force, who also has prime responsibility for supervision of all USAF combat and support forces." The author, in his operationally oriented remarks, covers the following . . . "Why Air Force Policy supports the objectives of the National Civil Defense Program and . . . how we fit it to . . . [Air Force] military requirements; . . . some of the basic concepts and problems in planning for military support in a civil defense emergency; . . . civil support for Air Force operations in an immediate post-nuclear attack period." Military, Civil Defense Objectives Compared; Civil Defense Is, and Should Be, Non-Military; Air Force Interested in Shelter Program; Other Areas of Common Interest; Military Support for Civil Operations; Priority System for Military Forces; Role of the State Adjutants General; Air

Force Military Support Available; The Civil Air Patrol; Civil Support of Military Operations; Need for Civil Resources; etc.

C. THE CIVIL DEFENSE DEBATE: PRO AND CON

* ARE SHELTERS NECESSARY? by Herman Kahn and Sidney Lens, in *The Rotarian*, (July 1962) 8-11 plus.

The editors of the periodical state that "Though public interest in the matter rises and falls and blows now hot and then cold, the question of whether to build bomb and fallout shelters continues to hang over us, [in 1962], suspended there by the continuing threat of nuclear war. Believing our readers consider the question of basic and universal importance, we have asked two authors of sharply opposite views to share their arguments . . . in this debate . . ." Mr. Kahn takes the "pro" side, while Mr. Lens takes the "con" side.

ARGUMENTATIVE THEMES IN CIVIL DEFENSE: (1) A CONTENT ANALYSIS OF THE *NEW YORK TIMES*, by Erwin P. Bettinghaus, East Lansing, Mich., Michigan State University of Agriculture, 1964. 72 p.

Contract No. OCD-PS-64-71. " . . . This report suggests that there are sixteen general areas into which civil defense materials can be placed. The categories are only relatively independent, but certainly serve to distinguish various positions in the civil defense dialogue. The report also offers the following tentative conclusions regarding the frequency of materials appearing in the *New York Times* for the period cited: 1. The greatest percentage (39.4%) of all arguments identified referred to fallout shelters. 2. The largest percentage of all stories (48.2%) were found to be favorable to OCD policies, and, when the neutral articles are removed from consideration the percentage rises to 69.9%."

* THE CASE AGAINST CIVIL DEFENSE, by Sidney Lens, in *The Progressive*, v. 26, no. 2 (February 1962) 10-46.

The editors state that "Few issues of our time have commanded wider attention or stirred greater controversy than the issue of civil defense . . . We are devoting most of this issue of *The Progressive* to what is avowed by the other side—'The Case Against Civil Defense'." Contents: Introduction—The Illusion of Civil Defense; The Many Moods of Civil Defense; The Changing Goals of Civil Defense; The Devious Arithmetic of Civil Defense; The Narrow

Limits of Nuclear Knowledge; The Calculus of War; Toward the Garrison State; The Only Protection.

THE CASE AGAINST FALLOUT SHELTERS, by Hanson W. Baldwin, in *Saturday Evening Post*, v. 235, no. 13 (31 March 1962) 8-9.

"For a year a great debate has raged across the land: To dig or not to dig?" Mr. Baldwin states that he had made up his mind and that he should be counted in the negative and that the mole psychology does not appeal to him. He discusses whether or not shelters save lives. "The 100-megaton weapon already has invalidated the civil-defense concepts of yesterday . . . A fallout-shelter program, viewed in perspective, offers at best only a fractional safety factor—if that—and initiates an open-end program of purely passive defense which, in terms of the problem, can have no definite goal . . . A shelter program cannot be justified on the basis of individual life-saving, but solely on the basis of national security. And that is precisely where the present program seems to fail. It is not worth the cost or effort without more—far, far more—to follow."

THE CASE FOR FALLOUT SHELTERS, by Maj. Gen. Dale O. Smith, in *Air University Review*, v. 15, no. 3 (March-April 1964) 81-83.

"Why is there such a hue and cry against fallout shelter? It would seem that if any device, within reason, could give us another real chance for survival, we should welcome it. Of course, if the second chance were such a slim one as to make the effort seem fruitless, we shouldn't waste our time or money. But even a slim chance is worth considering when life is at stake."

CHARADE OF CIVIL DEFENSE, by Stanley Meister, in *The Nation*, v. 190, n. 2 no. 24 (11 June 1960) 507-510.

Once a year our country participates in Operation Alert as Part of Civil Defense exercises. "Operation Alert 1960 probably had more protest . . . than the six previous national Civil Defense drills, but, for the most part, Americans . . . acquiesced and performed the . . . steps assigned them." The author analyzes the reasons for the protests against such drills and concludes that "the comedy, the waste, the bungling have their root . . . in public refusal to accept Civil Defense wholeheartedly." New York's Governor Rockefeller, "the most intellectual advocate of a strong Civil Defense, has implied that the public's refusal to accept Civil Defense comes from an unwillingness to face the tensions of the world realistically." The author believes that "should our

government listen to . . . Rockefeller and create a lavish, efficient Civil Defense, an acceptance of war and a faith in survival would storm the consciousness of America." Then the annual Operation Alert would be more meaningful.

THE CIVIL DEFENSE DEBATE, by J. Hirshleifer, in *The New Leader*, v. 45, no. 4 (19 February 1962) 10-14.

The author discusses the civil defense debate which "was initiated by President Kennedy's speech in July 1961, which indicated for the first time that the Federal government was going to concern itself seriously with the problem of providing a measure of population protection in the event of attack . . . Delays in developing a definite program, marked by a lack of continuing . . . leadership, apparently encouraged forces of . . . opposition [to the program]." After commenting on the various arguments of both sides of the debate, the author concludes that "obviously, . . . [civil defense] is and must remain the second string to our defensive bow; the first is deterrence of attack by threat of atomic retaliation. Our entire defensive posture, in turn, is merely instrumental to our main hope of inducing other nations to agree to a statement that will alleviate the threat of war. But such a settlement may not come about, and deterrence might fail as well. In that case, over and above the millions of unavoidable casualties, there are likely to be millions and millions more whose lives hang in the balance—depending upon whether or not we have provided in advance for shelters, medical supplies, food reserves and the like."

CIVIL DEFENSE: EXPERTS ARGUE PROS AND CONS. Nuclear news, v. 8, Sept. 1965: 15-20.

Excerpts from a "Panel Discussion on Civil Defense, American Nuclear Society Annual Meeting . . . June 23, 1965, Gatlinburg, Tennessee."

T. B. Taylor: Measures to counter the threat of nuclear disaster include the establishment of world law and machinery for its enforcement; arms control and disarmament; a permanent state of mutual deterrence between the major powers; the buildup of defenses against all delivery systems; a national fallout shelter program; an extensive program for civilian protection from war and its aftermath; and gradual decentralization of population. Unfortunately nations will have to rely on mutual deterrence, which is far from safe, for some time to come. If war does break out, underground shelters will cut casualties drastically. *Tom Stonier:* Certain forms of civil defense (CD) can be highly effective, but

experts in the field have begun to hold on to concepts as if they were fixed and to ignore factors that cannot be plugged into a computer. They have shown a tendency to confuse "what people can do following a disaster and what they will do." It is also likely that the existence of a civil defense program would prompt an attacker to hit the United States with everything he had. Ecological effects would be greater, and the long-term survival rate might well go down instead of up. *David F. Cavers*: Civil defense on a massive scale can have but two justifications: either as civilian protection against Soviet retaliation following an American first strike, or as a way to hold down American losses in the event of a Soviet attack. Both alternatives are equally pessimistic, the first because Americans should not assume they will start a nuclear war, and the second because a Soviet first strike would be intended to destroy the United States once and for all. The civil defense program envisioned by Project Harbor [a National Academy of Sciences study conducted for the Defense Department] will not protect against a death blow. Luckily it is most probable that a massive CD program will once again be ignored by Congress and the American people. *Eugene P. Wigner*: Reducing the consequences of nuclear attack also reduces its likelihood. One argument often ranged against civil defense is that protection of American citizens might embolden the Government to follow an aggressive policy unrestrained by fear. But since nuclear war would be catastrophic in any event, and since the United States "has no desire to extend its rule, its lower vulnerability will not lead to provocative behavior, much less to conflict." A fully effective shelter system is possible, and it is highly desirable as a short-term measure against war. (Extracted from: *Arms Control & Disarmament*, v. 2, no. 1.)

COMMUNITY SHELTERS; THE BAIT—AND THE TRAP, by Roger Hogan, in *The Nation*, v. 194, no. 8 (24 February 1962) 160-167.

"The idea of government aid for the construction of private, family shelters collapsed under a barrage of public and legislative criticism . . . The Kennedy Administration . . . put forward its new plan: community shelters. Inherent in this plan . . . [the author is convinced] is a dynamism which could have profoundly divisive effects on many segments of our national life."

THE COST OF SURVIVAL, by Ronald Steel in *The Commonweal*, v. 75, no. 3 (13 October 1961) 63-66.

"From beyond the pale of the forgotten, the

New Frontier has retrieved a moribund civil defense program under the new title of 'Operation Survival' and is resuscitating it with a generous transfusion of dollars. Hand in hand with the military build-up over Berlin, the President revived civil defense in solemn terms of urgency, calling for a new \$207 million bomb shelter program . . . From . . . Congress . . . came speedy action to pump new funds into bomb shelters . . . Defense Secretary Robert S. McNamara . . . [testified] for the President's crash program which would triple this year's civil defense budget, boosting it to \$312 million . . ." The author concludes that "Not even the most optimistic civil defense advocates think that the millions in the target areas could be saved."

A DEBATE ON THE QUESTION OF CIVIL DEFENSE, by Herman Kahn, Erich Fromm & Michael Maccoby, in *Commentary*, v. 33, no. 1 (January 1962) 1-23.

"In the hope of contributing to a clarification of the whole question of civil defense by bringing into focus the precise points of disagreement between the two main contending positions, . . . [Commentary] invited Herman Kahn (perhaps the leading advocate of a more intensified civil defense effort) and Erich Fromm (who has become one of America's most influential spokesmen for disarmament and whose collaborator in the present debate, Michael Maccoby, has been a prominent participant in the peace movement) to argue their respective cases . . ."

THE DECEPTION OF CIVIL DEFENSE, AND A PLAN FOR A NUCLEAR WAR PROTECTION SYSTEM, by Kenneth D. Barrett. Orlando, Fla., Independence Press, Inc., 1964. 215 p.

An extremely critical book concerning present civil defense doctrine, organization and operation in the U.S.—The author in the introduction states that he "decided to work out an adequate protection system for the people of the United States. The concept that defense against nuclear war is impossible is not in keeping with the American spirit." He feels that, "if the people of America were provided with a reasonable solution to the dilemma of nuclear war protection, they might individually set out to put this, or some other comparable plan, into action. It will, of course," he maintains, "be necessary to remove from power those who are responsible for the present C.D. Program before the country can go about protecting itself realistically." Partial contents: The Possibility of War; The Myths of Nuclear War; National Survival Requirements (Physical, Military Policy, Offensive Requirements); Civilian Survival

Requirements (Physical and Functional Requirements, Peace of Mind); A Realistic Civilian Protection System (Tunnel System, Tunnel Conversion, Protection Facilities, Specific Nuclear Threats); A Personnel Program for Survival; Protection of our U.S. Offensive System (Protection of our Military and Industrial Facilities, Rebuilding and a Future); What You Can Do.

DO WE WANT FALLOUT SHELTERS? by Seville Chapman, in *Bulletin of Atomic Scientists*, (February 1963) 24-26.

This article "appears as part of a continuing discussion on civil defense in the pages of the Bulletin . . . Here Dr. Chapman defends a program of civil defense construction . . . [concluding that] No one should infer that shelters represent the only problem in our international affairs. If we survive our present nuclear peril, there are other problems. But if we are to solve these problems, we must be alive to do so. Shelters are a form of insurance. We intend to prevent a tragic nuclear holocaust, but if we should not and if we have shelters, some of our people will survive to begin anew to work for a better world."

EXPENSE OF CIVIL DEFENSE, by Charles A. Betts, in *Science News Letter*, v. 88, no. 17 (30 October 1965) 282-283.

"The multimillion dollars spent on civil defense will, it is hoped, be an absolute waste of money. Scientists are divided as to value of the shelter program in saving lives."

FALLOUT SHELTERS AND SURVIVAL, by Oscar M. Ruebhausen, in *The Record of the Association of the Bar of the City of New York*, v. 17, no. 1 (January 1962) 27-40.

The author discusses: Why Civil Defense?; What Is Involved in Civil Defense?; Will Fallout Shelters Work?; Whose Is the Responsibility? He summarizes by stating that: "The problem of civil defense against nuclear attack is a tremendous one. It should not be minimized. But, the problem is a soluble problem and soluble at a cost well within our capacity to afford. One cannot read the literature in this field . . . without coming to the conviction that our nation and people can survive a nuclear attack. Nuclear weapons would bring damage and destruction on a major scale . . . but, survival is possible . . . The challenge before us is to avoid being trapped into a position where our only choice is between the cemetery . . . or surrender. Neither . . . are acceptable alternatives to a free people . . . [The author urges],

therefore, national strength and civil defense as a third alternative, as a means of survival with peace, with dignity, and with freedom."

THE ILLUSION OF CIVIL DEFENCE; DANGER FROM BLAST AND FIRE GREATER THAN FALLOUT, by Gerard Piel, in *Vital Speeches of the Day*, v. 28, no. 8 (February 1962) 239-244.

"Two ominous events—the testing of giant weapons in the Soviet Union and the sponsorship of fall-out shelters by our . . . Federal Government—compel each and every one of us to contemplate thermonuclear war at close range. We have lived with the possibility of this calamity for more than a decade. We must now reckon with its probability . . . When you have apprehended the nature of the war I believe [the author maintains] you will join me in the conclusion that civil defense is an illusion—an illusion that places our institutions and our lives in jeopardy. . . . The civil defense program of our Federal Government, however else intended, must be regarded as a step in the escalation process. This is a sinister development because it works a psychological subversion of both government and citizenry. It gives the sanction of action to the delusion that a thermonuclear war can be fought and survived. It encourages statesmen to take larger risks predicated upon First Strike Credibility and Post-Attack Recuperative Capacity. It disengages the citizen from vigilance over the rationality and responsibility of his elected officials."

THE ILLUSION OF CIVIL DEFENSE, by Gerard Piel, in *Bulletin of the Atomic Scientists*, v. 17 no. 2 (February 1962) 2-8.

"The human species has been living with the possibility of thermonuclear war for more than a decade, but in recent months, citizens of the U.S. have been learning to reckon with the probability of this disaster. The administration has undertaken to survey, mark and provision 20 million fallout shelter spaces in central cities. And the citizen is urged by the government—and by a quickly mushrooming fallout shelter industry—to provide shelter on his own premises in accordance with 'his needs.' . . . It cannot be said that the fallout shelter movement has found popular acceptance. Apart from the inertia which any such pushing and shoving must encounter in a democracy, the effort has evoked suspicion and incredulity. Close-range contemplation of thermonuclear war has brought many citizens to the conclusion that civil defense is an illusion . . . because it increases the probability of war." Contents: How

Strong to Build; Recuperation Easy?; Megatons Mean Firestorms; Fire VS. Blast; Self-Built Self-Deception; Cost Outweighs Protection; etc.

INSURANCE OR PROVOCATION? THE PARADOX OF CIVIL DEFENSE, by Ronald Steel, in *The Commonwealth*, v. 75, no. 25 (16 March 1962) 637-640.

"Out of the current morass of the fallout shelter debate, three . . . facts emerge. 1) Civil defense is an essential corollary of nuclear deterrence. 2) It cannot be had cheaply—either monetarily or morally. 3) It marks a significant intensification of the arms race. Only by dissipating some of the emotional fog around the civil defense controversy can we deal objectively with the facts we have to work with. And perhaps from that may come a rational decision on what we still can do . . . By advocating a federal fallout shelter program, the Administration has embarked upon a road which has no end. Millions for shelters lead inexorably, and logically, to billions for shelters. Moreover, thermonuclear war, while becoming ever more likely, is made to seem increasingly survivable. There is no cheap way out of this impasse . . . There is only one alternative . . . an immediate halt to the arms race, and nuclear disarmament under controls that would preclude its resumption and at the same time prevent other nations from attaining nuclear status . . . Unless we are willing to renounce our nuclear arms, and our nuclear diplomacy, we had best start digging our shelters as fast, and as deep, as we can."

IS CIVIL DEFENCE STILL IMPORTANT? THE ANSWER IS DECIDEDLY YES, by A. G. Field, in *The Fifteen Nations*, no. 14 (1960) 58-59 plus.

"Security of the homeland cannot be guaranteed solely through a high capacity for offence; there must be a national capacity for some form of effective defence, Civil Defence, to endeavour to curtail the effects of weapons that can strike home. It is necessary . . . [the author suggests] to survey the form and effect of attack likely to be received now in a nuclear war by the civilian economy and then to see what form or organization is needed to enable the survivors to recover and carry on life . . . Until universal peace is achieved and seen to be achieved, governments must devise measures for the protection of their peoples, in their homes and at their places of work."

IS CIVIL DEFENSE STILL IMPORTANT? by Rogers S. Cannell, in *The Fifteen Nations*, no. 15 (1960) 26-27 plus.

"It is commonly held that thermonuclear war would inevitably be a matter of mutual annihilation and that civil defense measures are futile against the effects of modern weaponry. Even the argument that civil defense may act as a deterrent to such annihilating aggression lacks conviction to those who believe—and who are persuaded an enemy will know—that civil defense measures cannot now significantly diminish a nation's vulnerability to attack. The fact is, however, that civil defense know-how has kept well abreast of knowledge and capability in the military sphere. Studies conducted at Stanford Research Institute over the past several years indicate that, for the United States at least, civil defense programs which are not prohibitively expensive can assure survival in case of nuclear war. The studies show too that survival would not be pointless: the postattack inventory of economic resources after even the heaviest attack we could expect upon the United States through the 1960's would permit national recovery."

Oehman, Gunnar. LINUS PAULING AND NUCLEAR WEAPONS. *International civil defence*, no. 123, Sept. 1965: 3-5.

Disputes the statements on civil defense made by Linus Pauling in Copenhagen, 1964, to the effect that shelters offer no real protection against nuclear explosions and that civil defense is a form of militarism, which increases the danger of war. The author feels that Pauling unwarrantably dealt with political, not scientific, matters, was guilty of generalization, and made "the thankless work of those responsible for Civil Defence even more difficult." (Extracted from: *Arms Control & Disarmament*, v. 2, no. 2.)

* NEITHER RUN NOR HIDE; THE CASE AGAINST CIVIL DEFENSE, by Alfred Hassler, in *Fellowship*, (1 May 1961) 1-16.

The author in this very critical article attempts to "lift the lid on Civil Defense." Alfred Hassler attempts to "expose the falsehood of CD claims that it can protect civilians from the effects of a war fought with nuclear weapons of mass destruction." He asks: "Is Civil Defense a well-meaning attempt to do the impossible—or is it a cruel deception?"

NO PLACE TO HIDE; FALLOUT SHELTERS—FACT AND FICTION, ed. by Seymour Melman. New York, Grove Press, Inc., 1962. 205 p.

The editor states that "The purpose of this book is to present information and analyses by responsible specialists on the issue of civil defense, and to show how this relates to alternative world and domestic

policies of the United States. It is intended chiefly as a statement of the case against systems of civil defense, while providing information useful to every citizen, regardless of point of view." The book provides "Discussion of the political and military issues of civil defense by . . . Arthur Waskow, Erich Fromm, Herman Kahn, Seymour Melman. Reports by specialists, independent scientists and committees of experts on nuclear bombing, problems of fallout shelter construction and habitation, psychological, biological, and social effects. Articles by Norman Cousins, Roger Hogan, and Lewis Mumford sounding an alarm about the erosion of traditional values in American society by civil defense programs."

THE POLITICS OF CIVIL DEFENSE, by Douglass Cater, in *The Reporter*, v. 25, no. 4 (14 September 1961) 32 plus.

"Ever since its inception six months after the Korean War began, the civil-defense program . . . provided a case study in the futile efforts of politicians to deal with a problem that was growing increasingly insoluble and irrepressible . . . Few matters . . . [had] been the object of more scrutiny. It began in the Pentagon soon after the Second World War when Secretary of Defense James Forrestal appointed commissions to examine the implications for the United States of the Hiroshima and Nagasaki bombings . . . What the . . . administration [in 1961] . . . proposed . . . [was] still exceedingly limited, in the view of those committed to a strong civil-defense program . . . As the East-West crisis . . . [deepened] there . . . [was] evidence of increasing public concern about the state of civil defense."

THE POLITICS OF SAFETY: AMERICAN CIVIL DEFENSE, by John Modell. New York, Columbia University, Bureau of Applied Social Research, 1963. 40 p.

"American civil defense was for years treated as a secondary and separate form of military activity. My thesis is that because of this the epithet of 'gigantic boondoggle' made sense. I [the author] will endeavor to show through a consideration of three aspects of American civil defense—political pressures upon the administration of civil defense, effects of military technology upon civil defense strategy, and attempts to broaden the base of support for civil defense—that indeed civil defense has suffered from the 'politics of safety,' an unlikely method of implementing a military program. In so doing, I will adumbrate the psychological difficulties inherent in allowing one aspect of the national military program to be so thoroughly divorced from its other aspects."

For this reason a historical view is indispensable: whatever the socially—or politically—conditioned predispositions of a person to interpret something as so or so, the input from which he snatches occasional views is a historical continuum. The reality of this continuum must be kept in mind when studying what something means to someone; that the history of American civil defense is a travesty of false pretensions and petty politics in the worse sense, undoubtedly has something to do with the oft-discussed social and psychological aversion to a system of fallout shelters . . ."

THE PRACTICALITY OF CIVIL DEFENSE, by Lucile Jantz. Washington, Georgetown University, 1961. 33 p. (Unpublished student paper.)

The author states that "That effects of nuclear bombs and the shelter and value of such a defense form the substance of this paper." Contents: Effect of Nuclear Explosions (Blast, Heat, Radiation); Civil Defense Shelters (Evacuation, Cost of a Shelter Program, Essentials for Survival in a Shelter, Shelters); Value of Civil Defense—Deterrent (Civil Defense As a Direct Deterrent, Russia's Program, How Many Could Be Saved, Additional Values); and Bibliography.

RUN, DIG OR STAY? A SEARCH FOR AN ANSWER TO THE SHELTER QUESTION, by Dean Brelis. Boston, Beacon Press, 1962. 196 p.

"The purpose of this book is given as a personal inquiry by the author to settle for himself whether or not to build a fallout shelter. His conclusion is that it won't do much good, and that the best solution to the problem is to see that peace is maintained." Partial contents: Civil Defense in a Nuclear War; Congress and the Bomb; The Great Debate; Congress and the Shelters; The Unsolved Problems; The Moral Dialogue; etc.

SCIENTISTS AND CIVIL DEFENSE: DIALOGUE AT BERKELEY, by John Walsh, in *Science*, v. 151, no. 3706 (7 January 1966) 53–57.

"Since the limited test-ban treaty went into effect in 1963, civil defense as an issue of public policy has lain practically dormant. A symposium on civil defense at the AAAS [American Association for the Advancement of Science] meeting . . . [in January at Berkeley, Calif.] may have anticipated the revival of debate, since a decision on deployment of anti-ballistic missiles is said to be imminent in Washington and an expanded civil defense program is viewed as an integral part of an ABM system. The symposium was conceived . . . as a means of meeting the sci-

entific community's 'duty to provide our fellow citizens with an objective account of the technical data relevant to the grave issues of public policy on war and defense.' . . . Takeoff point for the symposium may be said to be the Project Harbor report produced by a summer study group at Woods Hole in 1963 . . . The full report was not widely circulated, but a summary published by the Academy, was made generally available. A 'preliminary statement' included in the summary, which appears to have attracted more attention than anything else in it, said that the present limited civil defense program was 'considered to represent a minimum level of significant protection below which a national effort may not be justified at all.' A more adequate program, which was generally favored by the participants in the study, would include (1) shelters in target areas that are capable of protecting against blast and fire, (2) stockpiling of necessary supplies and hardening of critical facilities along with intensive planning to accelerate recovery, and (3) substantially greater federal involvement in the program in an effort to improve professional competence and coordination of operations."

SHELTERS AND SURVIVAL: A REPORT ON THE CIVIL DEFENSE MUDDLE, in *The New Republic*, v. 146, no. 3 (15 January 1962) 3-40.

This special issue of *The New Republic* . . . is a . . . narrative of contradictions, a documentation of differences among specialists and of widespread public confusion that itself reflects confusion at every

level of government." Partial contents: Civil Defense Muddle; Shelters and Survival, by Asher Brynes and Garrett Underhill; That Long-Awaited Booklet (Fallout Protection, What to Know and Do About Nuclear Attack, issued by DOD); Some Effects of Radiation; The Postattack Situation; Training for Civil Defense; Protection Against What?; Civil Defense in the USSR; How Big Will the Bomb Be?; The Contribution of Kahn; To Build or Not to Build; etc.

SURVIVAL OF THE FEWEST—THE SHOCKING TRUTH ABOUT OUR CIVIL DEFENSE: MILLIONS WOULD DIE NEEDLESSLY IN A NUCLEAR ATTACK, by Don Oberdorfer, in *The Saturday Evening Post*, v. 236, no. 11 (23 March 1963) 17-21.

"Civil defense is as much a governmental responsibility as the maintenance of an army. Because of . . . [the] failure [in October 1962] to provide adequate civil defense, at least 13 million Americans would have died needlessly if even a moderate-sized nuclear attack had been delivered on the United States . . . This is all the more shocking because a substantial measure of civil defense is possible and practical. It is also imperative if more than a tiny minority is to survive any large and well-planned nuclear attack on the United States." The author discusses President Kennedy's shelter program, and also reflects on Governor Rockefeller's strong support on civil defense in New York, which influenced the government's thinking.

III. Congress and Civil Defense

A. CONGRESSIONAL ATTITUDES

CIVIL DEFENSE AND THE CONGRESS: QUIET REVERSAL, by Stanley L. Newman, in *Bulletin of the Atomic Scientists*, v. 18, no. 9 (November 1962) 33-37.

"Why did Congress astronomically increase civil defense funds in August of 1961 and then—only eleven months later—reverse itself? . . . Congressional reaction to the civil defense issue, involving as it does the compelling need to examine our basic defense strategy, illustrates the effects of the cold war on the legislative process. Although defense strategy is perhaps the most important question facing the nation, Congressmen, perhaps in fear of political reprisal, will not address themselves to such issues as counterforce, stable deterrence, or inde-

pendent initiatives. There is little hope that the great debate on defense policy will take place unless it is forced upon Congress either by a radical change in the relationship between the United States and the Soviet Union or by the kind of demand by the American people which cannot be safely ignored. But the case history of civil defense serves as a warning that the debate on defense policy cannot be postponed to a time of crisis."

CIVIL DEFENSE: BILLION-DOLLAR BOONDOGGLE, by Stephen M. Young, in *Reader's Digest*, v. 78, no. 470 (June 1961) 104-106.

A critical view of the U.S. civil defense effort by the US Senator from Ohio. He feels that the program is "unrealistic and wasteful," and concludes by stating that in his view, "no civil-defense program

will protect our citizenry adequately should war strike . . ."

FALLOUT SHELTER PROGRAM, in *The Review*, v. 43, no. 3 (November-December 1963) 89-90 plus.

"On September 17 the U.S. House of Representatives passed a bill amending the Civil Defense Act and authorizing the expenditure of \$190.6 million for a fallout shelter development program in fiscal year 1964. The measure was then slated for Senate action. According to the report to the House accompanying H.R.8200, submitted by the Honorable F. Edward Hebert, Chairman of the Armed Services Subcommittee which conducted the hearing: 'At the beginning of the hearing on May 28, 1963, most perhaps all, of the committee members were, for one reason or another, opposed to a fallout shelter program . . . The committee wishes to stress, because it believes it to be particularly important, the original instinctive rejection of the program together with the rigorously maintained atmosphere of objectivity on the part of the committee members. The long line of witnesses then began to appear and give testimony . . . As these witnesses presented their testimony, a slow but easily perceptible change was evident in the attitude of the committee members. Opposition to the program melted and then hardened into an attitude of firm belief in and support of the fallout shelter program.' The full Armed Services Committee voted the bill out favorably 32 to 4, and the Honorable Carl Vinson, Chairman of the Committee, supported the bill vigorously in the debate on the floor of the House. Among the 108 witnesses who testified or issued statements in support of civil defense during the subcommittee hearings was General Earle E. Wheeler, Chief of Staff, U.S. Army. Pertinent quotes from his testimony are reported here. General Wheeler spoke for the four services and the Department of Defense."

KENNEDY SHOULD PUT CIVIL DEFENSE UNDER MILITARY, by Pat Frank, in *Missiles and Rockets*, v. 7, no. 24 (12 December 1960) 16-17.

"The Symington Committee Plan to establish a separate military command responsible for Civil Defense is designed to give the people of the United States a real chance for survival in the event of nuclear war. The Command, which would absorb the National Guard and Reserve elements of all three services, is intended to have equal stature with other major commands—including Strategic and Tactical.

It would, in effect, make the National Guard and Reserve units responsible for Civil Defense under direction from the Pentagon." The author "hails reorganization proposal as the only realistic hope for survival, [and] calls for home shelters."

THE MESS IN CIVIL DEFENSE, in *Congressional Record*, v. 110, Part 9 (19 May-3 June 1964) 11551-11552.

Remarks by Senator Stephen M. Young of Ohio on 21 May 1964, in the Senate, concerning the U.S. civil defense program, in which he states in part: "After 13 years, after the complete waste of a billion and a half taxpayer's dollars, and after a thousand silly schemes . . . , they still hope to continue the fantastic civil defense boondoggle. There is perhaps no other function or agency of the Federal Government that has been so thoroughly discredited." Senator Young includes an editorial from the *Cleveland Press*, published on May 16, 1964, entitled, "The Mess in Civil Defense."

* WHY CIVIL DEFENSE? by Milton MacKaye, in *Nuclear News-ANS* (October 1963) 11-13.

This article "gives a general background of Civil Defense activity in the U.S., and presents reasons why there has been a recent sharp upturn in Congressional (and national) interest in the subject." Partial contents: Responsibility for the Program; Current Projects; Background Information; Encouraging Acceptance of Civil Defense; etc.

B. CONGRESSIONAL HEARINGS, BILLS, AND ACTS (SEE ALSO APPENDIX A)

U.S. Congress. Joint Committee on Defense Production. ANNUAL REPORT OF THE ACTIVITIES, WITH MATERIALS ON MOBILIZATION FROM DEPARTMENTS AND AGENCIES. 14TH, 1965. Washington, U.S. Govt. Print. Off., 1965. 467 p. (89th Cong., 1st sess. House. Report no. 1)

Reviews the programs carried out under the Defense Production Act of 1950 for fiscal year 1964. Reports furnished to the Committee by Government agencies for inclusion in the appendix cover mobilization activities for the past year, including civil defense. (Extracted from: *Arms Control & Disarmament*, v. 1, no. 3.)

ASSISTANCE TO CIVIL DEFENSE BY RESERVES. HEARING BEFORE A SUBCOMMITTEE OF THE COMMITTEE ON ARMED SERVICES, UNITED STATES SENATE, EIGHTY-SIXTH CONGRESS, SECOND SES-

SION, ON S. RES. 67, JUNE 1, 1960. Washington, Government Printing Office, 1960. 40 p.

A study to determine whether the Civil Defense Program may be furthered by assistance from the Reserve Components of the Armed Forces.

CIVIL DEFENSE—FALLOUT SHELTER PROGRAM. HEARINGS BEFORE SUBCOMMITTEE NO. 3, COMMITTEE ON ARMED SERVICES, HOUSE OF REPRESENTATIVES, EIGHTY-EIGHTH CONGRESS, FIRST SESSION, PURSUANT TO H.R.3516, H.R.8200, TO FURTHER AMEND THE FEDERAL CIVIL DEFENSE ACT OF 1950, AS AMENDED, TO PROVIDE FOR SHELTER IN FEDERAL STRUCTURES, TO AUTHORIZE PAYMENT TOWARD THE CONSTRUCTION OR MODIFICATION OF APPROVED PUBLIC SHELTER SPACE, AND FOR OTHER PURPOSES. PART I, MAY 28, 29 AND JUNE 3, 1963. PART II, JUNE 3-6, 10-12, 17, 21, 24-27, JULY 10, 11, 17-19, 23 AND 31, 1963. PART III, AUGUST 20, 1963. Washington, Government Printing Office, 1963. 4 v (Nos. 11, 20, and 22.)

CIVIL DEFENSE 1961. HEARINGS BEFORE A SUBCOMMITTEE ON GOVERNMENT OPERATIONS HOUSE OF REPRESENTATIVES, EIGHTY-SEVENTH CONGRESS, FIRST SESSION, AUGUST 1, 2, 3, 4, 7, 8, 9, 1961. Washington, Government Printing Office, 1961. 554 p.

Representative Chet Holifield in his opening statement gave the following reasons why the hearings on civil defense were called: (1) To understand more fully the new civil defense program promulgated by President Kennedy; (2) To update technical findings of importance and interest to civil defense; (3) To take a forward look at the shape of the civil defense program 5 years hence; and (4) To take a backward look at what, if anything, civil defense has accomplished to date, so that pitfalls and errors of the past may be avoided. Includes information on Soviet Civil Defense organization and program. Appended among others: Excerpt from the President's address to the Congress May 25, 1961, on "Urgent National Needs" (H.Doc. 174, 87th Cong., 1st Sess.); also Excerpt from the President's televised address to the American people, July 25, 1961.

CIVIL DEFENSE 1962. HEARINGS BEFORE A SUBCOMMITTEE ON GOVERNMENT OPERATIONS HOUSE OF REPRESENTATIVES, EIGHTY-SEVENTH CONGRESS, SEC-

OND SESSION, FEBRUARY 19, 20, 21, 23, 26, and 27, 1962. Washington, Government Printing Office, 1962. 2 Pts. (Part I: Testimony of Witnesses. Part II: Appendixes.)

These hearings were called to examine the civil defense program of the Department of Defense and the Department's operations in civil defense under Executive Order 19952 promulgated by President Kennedy on July 20, 1961. "This order transferred major civil defense responsibilities from the Office of Civil and Defense Mobilizations to the Department of Defense, and OCDM was reconstituted as the Office of Emergency Planning." Among the appendixes: Organizational chart, Office of Civil Defense, Department of Defense.

CIVIL DEFENSE. PART I—SHELTER POLICY; PART II—POST-ATTACK PLANNING; PART III—RELATION TO MISSILE PROGRAMS. HEARINGS BEFORE A SUBCOMMITTEE OF THE COMMITTEE ON GOVERNMENT OPERATIONS, HOUSE OF REPRESENTATIVES, EIGHTY-SIXTH CONGRESS, SECOND SESSION, MARCH 28-31, 1960. Washington, Government Printing Office, 1960. 573 p.

The hearings reviewed the status of "(1) Shelter construction under the so-called national shelter policy; (2) Planning for post-attack operations; and (3) Civil defense implications of missile base location and 'hardening' programs."

CONGRESS AND THE NATION 1945-1964; A REVIEW OF GOVERNMENT AND POLITICS IN THE POSTWAR YEARS. Washington, Congressional Quarterly Service, 1965. 1784 p.

This book is a summary coverage of legislation and politics that had accumulated in twenty Congressional Quarterly Almanacs. It spans two decades from Truman to Eisenhower to Kennedy to Johnson. "It provides in one volume a single reference for each field of legislation (including that for civil defense), instead of requiring references to twenty different Almanacs . . . Many of the legislative actions and trends began well before the 1945-64 period; a ready understanding of them required tracing from the earlier years. Whenever necessary, that was done for this book." Extensive indexes lead to specific subjects. For instance, many references to civil defense legislation may be found under the following headings: developments; fallout shelter; Federal aid programs; Federal Civil Defense Act of 1950; Federal Civil Defense Administration; funds; medical stockpiles; nuclear attack investigation; shelter program; among many others.

* EXCERPTS— CONGRESSIONAL TESTIMONY AND ACTIONS ON CIVIL DEFENSE (89TH CONGRESS, 1ST SESSION), JANUARY-JUNE 1965. Washington, Office of the Secretary of the Army, Office of Civil Defense, 1965. 143 p. (MP-30-A.)

This document contains appropriate excerpts relating to civil defense of testimony before Congress and actions taken during the first six months of the 89th Congress. The material is arranged generally in chronological order as follows: House Subcommittee on Department of Defense Appropriations for FY 1966; House Committee on Armed Services; Senate Subcommittee on Military Procurement Authorizations; House Subcommittee on Independent Offices; House Report No. 271, April 29, 1965, from Committee on Armed Services; House Subcommittee on Independent Offices; Senate Subcommittee on Independent Offices.

HEARINGS ON MILITARY POSTURE AND H.R.4016, BEFORE THE COMMITTEE ON ARMED SERVICES, HOUSE OF REPRESENTATIVES, EIGHTY-NINTH CONGRESS, FIRST SESSION. Washington, Government Printing Office, 1965. pp. 129-1556. (No. 7.)

These hearings also include testimony on civil defense. Robert S. McNamara, Secretary of Defense maintained that the major issue concerns the construction of a complete nationwide fallout shelter system (p.257). He also discusses: emergency operations, financial assistance to States, management, public information, regional operations centers, research and development, shelter development, shelter provisions shelter survey and marking, training and education, and warning. Statements on civil defense are also made by Stephen Ailes, Secretary of the Army, and Dr. Harold Brown, Research and Development, Department of Defense. Testimony by Office of Civil Defense includes statements on: military support for civil defense, public awareness, use of Reserve Forces, shelter program (including Soviet program), and supporting programs.

HEARINGS ON MILITARY POSTURE AND H.R.13456 BEFORE THE COMMITTEE ON ARMED SERVICES, HOUSE OF REPRESENTATIVES, EIGHTY-NINTH CONGRESS, SECOND SESSION. Washington, Government Printing Office, 1966. pp. 7287-8633. (No. 64.)

Included in the statement by Secretary of Defense Robert S. McNamara is that on Strategic Offensive and Defensive Forces, discussing "the two

major programs-which constitute our general nuclear forces: the strategic offensive forces and the strategic defensive forces, including civil defense. Because of the close interrelationship and . . . the interaction of these components of our general nuclear war posture, it is essential that they be considered within a single analytical framework. Only then can the nature of the general nuclear war problem in all of its dimensions be fully grasped and the relative merits of available alternatives be properly evaluated." In discussing Civil Defense, Mr. McNamara touches on: shelter survey, shelter development, shelter in Federal buildings, shelter provisions, warning, emergency operations, financial assistance to States, research and development, management, public information, training and education.

INDEPENDENT OFFICES APPROPRIATIONS, 1961. HEARINGS BEFORE THE SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS, UNITED STATES SENATE, EIGHTY-SIXTH CONGRESS, SECOND SESSION, ON H.R.11776, MAKING APPROPRIATIONS FOR SUNDRY INDEPENDENT EXECUTIVE BUREAUS, BOARDS, COMMISSIONS, CORPORATIONS, AGENCIES, AND OFFICES, FOR THE FISCAL YEAR ENDING JUNE 30, 1961, AND FOR OTHER PURPOSES. Washington, Government Printing Office, 1960. 843 p.

Office of Civil and Defense Mobilization hearings appear on pages 403-479.

INDEPENDENT OFFICES APPROPRIATIONS, 1964. HEARINGS BEFORE THE SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS, UNITED STATES SENATE, EIGHTY-EIGHTH CONGRESS, FIRST SESSION ON H.R.8747, MAKING APPROPRIATIONS FOR SUNDRY INDEPENDENT EXECUTIVE BUREAUS, BOARDS, COMMISSIONS, CORPORATIONS, AGENCIES, AND OFFICES, FOR THE FISCAL YEAR ENDING JUNE 30, 1964, AND FOR OTHER PURPOSES. PART II. Washington, Government Printing Office, 1963. pp.943-2397.

The hearings on the Office of Civil Defense, Department of Defense, 17 October 1963, appear on pp.1391-1502. Included among much other testimony is a summary of the major policy actions taken by the 55th annual meeting of the Governors' Conference, meeting at Miami Beach on July 22 to 24, included with the report of the committee on civil defense. Among many statements appear some dealing with: current program activities; fallout protection in federal buildings; leadership support for

civil defense; shelter programs of other countries; etc.

INDEPENDENT OFFICES APPROPRIATIONS FOR 1964. HEARINGS BEFORE A SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS, HOUSE OF REPRESENTATIVES, EIGHTY-EIGHTH CONGRESS, FIRST SESSION, PART III. Washington, Government Printing Office, 1963. 1195 p.

Office of Civil Defense hearings were held on 11 September 1963 and appear on pages 924-1038. Testimony covers, among others, civil defense as an element of total defense, lifesaving potential of the shelter system, antiballistic missile defense and fallout, postattack radiation problems, Soviet and European civil defense, NATO civil defense resolution, effect of test ban treaty, effect of nuclear explosion on Washington, D.C., blast protection in civil defense program, effect of nuclear explosion on Moscow, fallout protection for prime target areas, etc.

INDEPENDENT OFFICES APPROPRIATIONS FOR 1965. HEARINGS BEFORE A SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS, HOUSE OF REPRESENTATIVES, EIGHTY-EIGHTH CONGRESS, SECOND SESSION, PART 2. Washington, Government Printing Office, 1964. 1743 p.

Office of Civil Defense hearings appear on pages 1492-1731. Testimony on, among others: fallout shelter program, relation of Nike X system to fallout shelters, transfer of OCD to the Secretary of the Army, fallout shelter program, state and local civil defense organizations, warning and detection programs, status of "NEAR" system, radio warning systems, emergency broadcast system, damage assessment, etc.

INDEPENDENT OFFICES APPROPRIATIONS FOR 1966. HEARINGS BEFORE A SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS, HOUSE OF REPRESENTATIVES, EIGHTY-NINTH CONGRESS, FIRST SESSION, PART 3. Washington, Government Printing Office, 1965. 1038 p.

Hearings on civil defense appear on pages 604-686.

INDEPENDENT OFFICES APPROPRIATIONS, 1966. HEARINGS BEFORE THE SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS, UNITED STATES SENATE, EIGHTY-NINTH CONGRESS, FIRST SESSION

ON H.R.7997. Washington, Government Printing Office, 1965. 1362 p.

Hearings on civil defense appear on pages 6-81. See also: Independent Offices Appropriations Bill, 1966—Report to Accompany H.R.7997. Washington, Government Printing Office, 1965. 32 p. (89th Congress, 1st Session, House of Representatives, Report No.320.)

INDEPENDENT OFFICES APPROPRIATIONS FOR FISCAL YEAR 1967. HEARINGS BEFORE THE SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS UNITED STATES SENATE, EIGHTY-NINTH CONGRESS, SECOND SESSION ON H.R.14921. PARTS 1 AND 2. Washington, Government Printing Office, 1966. 2 v.

Hearings on civil defense appear on pages 81-158.

MISCELLANEOUS CIVIL DEFENSE BILLS. HEARING BEFORE THE COMMITTEE ON ARMED SERVICES, UNITED STATES SENATE, EIGHTY-SEVENTH CONGRESS, FIRST SESSION ON H.R.2877 AUTHORIZING THE DIRECTOR, OFFICE OF CIVIL AND DEFENSE MOBILIZATION, TO APPROVE A FINANCIAL CONTRIBUTION FOR CIVIL DEFENSE PURPOSES TO THE STATE OF OKLAHOMA, H.R.8383 PROVIDING RETROACTIVE FINANCIAL CONTRIBUTIONS TO THE STATES BY THE FEDERAL GOVERNMENT, H.R.8406 CHANGING THE NAME OF THE OFFICE OF CIVIL AND DEFENSE MOBILIZATION TO THE OFFICE OF EMERGENCY PLANNING. Washington, Government Printing Office, 1961. 17 p.

NATIONAL FALLOUT SHELTER PROGRAM. SIXTEENTH REPORT BY THE COMMITTEE ON GOVERNMENT OPERATIONS. Washington, Government Printing Office, 1962. 97 p. (87th Congress, 2d Session, House Report No.1754, Union Calendar No.738.)

This is the committee's eighth formal report on civil defense, based on public hearings held by the Military Operations Subcommittee on February 19, 20, 21, 23, 26, and 27, 1962, and on supplemental information. Studies and investigations by the subcommittee in the civil defense field have been continuing since 1955. The main purpose of the 1962 hearings was to examine Department of Defense operations in civil defense under Executive Order 10952 promulgated by President Kennedy on July 20,

1961. Contents: Organization for Civil Defense; National Shelter Survey; Shelter Supplies and Equipment; Shelter Incentive Program; Shelters in Federal Buildings; Private Shelter Building; Information and Training; Communications and Warning; Research and Development; Casualty and Damage Assessment; State and Local Participation; Civil Defense Stockpile; Committee Commentary and Recommendations.

NEW CIVIL DEFENSE PROGRAM. NINTH REPORT BY THE COMMITTEE ON GOVERNMENT OPERATIONS, SEPTEMBER 21, 1961. Washington, Government Printing Office, 1961. 82 p. (87th Congress, 1st Session, House Report No.1249, Union Calendar No.534.)

The Military Operations Subcommittee held hearings: "To understand more fully the new civil defense program promulgated by President Kennedy; to update technical findings of importance and interest to civil defense; to take a forward look at the

shape of civil defense program 5 years hence; and, to take a backward look, at what, if anything, civil defense has accomplished to date, so that pitfalls and errors of the past may be avoided." This present report is thus based on the study by the Military Operations Subcommittee. Contents: The President's Message; Approaches to Reorganization Executive Order 10952; Evolution of a National Shelter Policy; The New Shelter Program; Civil Defense—1961-65; Basic Attitudes Toward Civil Defense; and Soviet Civil Defense.

SUBCOMMITTEE NO.3 CONSIDERATION OF H.R.10314, TO FURTHER AMEND THE FEDERAL CIVIL DEFENSE ACT OF 1950, AS AMENDED, TO EXTEND THE EXPIRATION DATE OF CERTAIN AUTHORITIES THEREUNDER, AND FOR OTHER PURPOSES. HOUSE OF REPRESENTATIVES, COMMITTEE ON ARMED SERVICES SUBCOMMITTEE NO.3, MARCH 23, 1964. Washington, Government Printing Office, 1964. pp.9091-9124. (No.39.)

IV. Implementing and Administering Civil Defense (See Also Section VI)

A. CIVIL DEFENSE PLANS, PROGRAMS, AND OPERATIONS

1. Miscellaneous Aspects

CIVIL DEFENSE, by Col. Dino A. Alberti, in *Military Review*, v.45, no.12 (December 1965) 34-38.

The author reviews the course of civil defense in the US which "began in a limited manner during World War I." He describes the earlier Defense Councils, the responsibilities during and after World War II, the Office of Civil Defense, The Office of Emergency Planning, State Organization, etc. "The basic problem of civil defense and emergency assistance has come a long way since 1917. Many problem areas remain. But the country has had the benefit of considerable experience since the days of World War I. The future may be obscure, but it seems safe to say that the future will see closer coordination of Federal, state, and local activities in this often perplexing area of activity."

• **CIVIL DEFENSE—THE CITIZEN'S CHOICE**, by Barry Commoner, in *Nuclear Information*, v.6, no.7 (June-July 1964) 1-17.

This issue of NI concludes and sums up the previous eleven issues on nuclear war and civil defense. This series was designed to provide the citi-

zen with some of the facts, interrelationships and principles that may help him make these and the other momentous decisions of nuclear war and civil defense. Partial contents: The Basic Facts (Nuclear Weapons, Chemical and Biological Weapons, The Vehicles, What Kind of an Attack? Immediate Consequences of an Attack); What Happens Next? (Would the Population Recover and Grow? Would the Economy Survive? Will the Biosphere Recover?); Civil Defense Choices; Civil Defense and National Defense; The Ultimate Choice. With references.

2. The Lessons of National Disasters and Calamities

THE ALASKAN EARTHQUAKE. Washington, Office, Secretary of the Army, Office of Civil Defense, 1964. 29 p.

This is a preliminary report concerning the great earthquake that struck South Coastal Alaska on March 27, 1964, and subsequent civil defense emergency operations. Partial contents: A Classic Operational Exercise; Anchorage Emergency Operations; State Civil Defense; Federal Civil Defense; Office of Emergency Planning; Military Support Concept; The Essence of Civil Defense, etc.

THE ALASKAN EARTHQUAKE: A CASE STUDY IN THE ECONOMICS OF DISASTER.

by Howard Kunreuther and Elisandra S. Fiore Washington, Institute for Defense Analyses, Economic and Political Studies Division, 1966. 162 p. (DA HQ 65-4142.)

Part I: Immediate Post-Disaster Recuperation; Part II: Long-Term Economic Recovery; Part III: Role of the Federal Government in a Disaster; Part IV: Lessons for Civil Defense Planning (Relevance to an all-out nuclear war; relevance to a limited strike nuclear war; relevance to the civil defense mission as it applies to natural disasters). Tables.

DISASTER AND RECOVERY: THE BLACK DEATH IN WESTERN EUROPE, by Jack Hirscheleifer. Santa Monica, Calif., The Rand Corp., 1966. 31 p. (Memorandum RM-4700-TAB.)

This research was sponsored by the San Francisco Operations Office of the U.S. Atomic Energy Commission under Contract AT(04-3)-414, Project Agreement No.3.—“No recorded historical disaster is fully comparable to the potential catastrophe of a large-scale nuclear war. The Black Death of 1348-50, however, perhaps approaches a hypothetical nuclear war in geographical extent, abruptness of onset, and scale of casualties. In other important respects its impact was unlike that of war; in particular, there was no direct destruction of material property . . . Nevertheless, the analysis of even such a remote historical experience may help illuminate some of the sources of, and limitations upon, the human potentialities for recovery from any great catastrophe.” With bibliography.

FLOODS AND THE “POSTATTACK BIOLOGY PROBLEM”: A PRELIMINARY SURVEY, by H. H. Mitchell. Santa Monica, Calif., The Rand Corp., 1965. 27 p. (Memorandum RM-4238-TAB.)

Research sponsored by the San Francisco Operations Office of the U.S. Atomic Energy Commission under Contract AT(04-3)-414, Project Agreement No.1.—“This report attempts to place the post-attack problem of flood damage in the United States on a somewhat firmer footing than is customary. It suggests that bounds on the seriousness of the problem can be estimated by considering the maximum floods that have already occurred, for, as the study points out, if very large floods do occur, their magnitude is not likely to be greatly affected by the loss of ground cover due to the fire and radiation effects of a thermonuclear attack. The limit so estimated is \$4 billion (at a 1950-51 cost and development level). Health aspects of floods and human adjustment to floods are considered in the light of past experience. Some problems related to the postattack situation

are suggested for further study.” With references.

GAS! by Maj. W. D. McGlasson, in *The National Guardsman*, v.16, no.12 (December 1962) 2-6 plus.

How 2,500 Mississippi National Guardsmen assisted the people of Natchez when they were threatened by “four huge tanks of deadly chlorine which reposed like gigantic time bombs on the bottom of the [Mississippi] River.”

HISTORICAL EXAMPLES OF ECOLOGICAL DISASTER, by Jean M. Ingersoll. Harmon-Hudson, N.Y., Hudson Institute, Inc., 1965. 88 p. (HI-518-RR/A1.)

Prepared under Contract no. OCD-OS-62-218, Department of Defense, Office of Civil Defense OCD Work Unit 3511A.—“OCD, DOD, by analysis of historical analogues to catastrophic alterations of the natural environment, seeks to provide a better data base for predicting ecological effects of possible thermonuclear attack upon the U.S. This report is one of a series analyzing instances of natural disasters and those resulting from activities of man. A combination of these factors resulted in famine in Russia in 1921-22 and in Bechuanaland in 1965. Chaos of war and revolution, and drought, brought widespread starvation and disease to Bechuanaland, where ‘no crops were reaped throughout the country’ in 1965. Famine could be a problem in the U.S. in some post-attack circumstances, depending on the size and character of the attack and the degree of preparedness to meet the possibility of famine. Includes recommendations for U.S. policy to avert or alleviate postattack famine.” With: references, maps, figures, and tables. For other pamphlets in this series of Historical Examples of Ecological Disaster by the same author, see also: HI-243-RR/A2-3, 5 June 1963; HI-303-RR/A1-2, 8 January 1964; and HI-360-RR/A1-2, 1 September 1964; all published by the Hudson Institute, under the same contract number as the first.

* **HURRICANE DORA**, 1964. Washington, Department of Defense, Office of Civil Defense, September 1964. 45 p.

“A report concerning the emergency actions of State and local governments, the military services, and Federal agencies in preparing for and meeting the effects of one of the largest and most violent of tropical storms. The coordinated actions—civil defense at work in a peacetime emergency—protected lives and property over an extensive area of the southeastern United States. The conditions of this type emergency require exercise of many of the pro-

cedures which would be used in a national emergency. Because of this, OCD provides this Report in the belief that it will be helpful to State and local governments in their emergency planning." Map.

* **INTERGOVERNMENTAL RELATIONS IN DISASTER RELIEF IN TEXAS**, by Billy G. Crane. Austin, Texas, University of Texas, 1960. 331 p. (Unpublished Ph.D. Dissertation.)

The history of disaster relief and its contemporary effectuation; the pre-impact activities of disaster relief (the Waco tornado of 1953, etc.); impact activities of disaster relief (the Panhandle blizzard of 1957, etc.); post-impact activities of disaster relief (hurricane Audrey of 1957, etc.). Conclusion. Appendixes. Bibliography.

PLAGUE IN THE UNITED STATES: AN ASSESSMENT OF ITS SIGNIFICANCE AS A PROBLEM FOLLOWING A THERMONUCLEAR WAR, by H. H. Mitchell. Santa Monica, Calif., The Rand Corp., 1966. 49 p. (Memorandum RM-4968-TAB.)

This research was sponsored by the San Francisco Operations Office of the U.S. Atomic Energy Commission under Contract AT(04-3)-414, Project Agreement No.3.—"The modern pandemic of plague which started in China in 1855 brought this disease to the United States . . . Although [now] the total number of cases is small, and in recent years has almost declined to zero, the potential exists for a large-scale epidemic . . . An epidemic of plague in the United States is a potentially serious threat as a consequence to the disruption which would follow a thermonuclear war . . . Assessing the secondary biological consequences which may follow from the immediate devastation of a nuclear war is a complex and difficult task. It is hoped that this document will be of general value as an illustrative 'case study.' It reveals some of the strengths and weaknesses involved in the overall work of preparing to deal with biological events whose manifestations are difficult to predict." With references.

REPORT ON OPERATION CHLORINE. Washington, U.S. Department of Health, Education, and Welfare, Public Health Service, 1963. 82 p.

When on 23 March 1961 the barge WYCHEM 112 sank to the bottom of the Mississippi River, its deadly load of 1100 tons of liquid chlorine threatened eighty thousand people in the Natchez City area. This report describes the measures that were taken to protect the people, and the outstanding cooperation among the Federal, State, and local officials,

and voluntary organizations in the emergency. Information on the role played by the Mississippi National Guard in the evacuation plans, is included. Photos and map.

3. *Civil Defense Role and Mission*

* **ADDRESS BY JOSEPH ROMM, ACTING DIRECTOR OF CIVIL DEFENSE, TO THE LEGISLATURE OF THE STATE OF MAINE, AUGUSTA, MAINE, FEBRUARY 8, 1967**. Washington, Office of the Secretary of the Army, Office of Civil Defense, 1967. 15 p.

This speech on today's civil defense program not only provides the fundamental factors governing the nature and direction of the civil defense program, but outlines the primary focus of civil defense at the present time. He concludes by stating "that the civil defense program of today, which does not pretend to offer the impossibility of total security, is a feasible, practical program, and is one that is well within our ability to carry out. It is a prime example of Federal, state, and local cooperation."

CHANGING PROSPECTS, MISSIONS AND ROLES FOR CIVIL DEFENSE: 1965-1975, by William M. Brown and others. Harmon-on-Hudson, N.Y., Hudson Institute, Inc., 1965. 44 p. (HI-447-RR.)

Prepared under Contract OCD-OS-62-18 and Work Unit Subtask 4211-A for the Office of Civil Defense, Department of the Army.—"During the past few years the study of questions related to civil defense has developed a number of new possibilities for more effective protection relative to expenditures, at various budgetary levels. There have also been important changes in the international and technological environment—changes which have significant implications for proposed civil defense programs. This paper presents in summary form some of the more important of these developments, and discusses their implications for possible civil defense programs." Partial contents: The Strategic Environment; The Choice of Scenario for Civil Defense Planning; New Developments in Civil Defense and Emergency Planning; Conclusion—The Place of Civil Defense in Overall National Policy; etc.

* **CIVIL DEFENSE**, by W. P. Durkee. Washington, Office, Secretary of the Army, Office of Civil Defense, 1966. 12 p.

This is a speech made by Mr. Durkee at the Army War College in Summer of 1966. Mr. Durkee discusses some of the vital elements that make up the current Civil Defense program, and outlines the role

of Civil Defense in our total national defense structure. Included as appendixes are maps, charts, tables, etc., used in conjunction with the speech.

CIVIL DEFENSE: AN OPERATIONAL EVALUATION, by Benjamin H. Colmery, Jr., in *Naval Institute Proceedings*, v.89, no.9 (September 1963) 66-73.

This paper attempts "to define the civil defense problem, to demonstrate the specifics in which civilian defense operations are basically different from military operations, and to outline a system by which civil defense can be made to operate. There are potential wartime and peacetime disasters which require organized, heroic civilian efforts. This paper is addressed only to the situation of wartime attack on the United States . . . It is the contention of this paper that each local community faced with non-nuclear problems is fighting an independent battle of survival and the role of higher civil defense echelons is to support these local units. The upper echelon is not directing the efforts of local units as in the military; it is supporting them . . . To be implemented effectively, the nature of civil defense must be understood, the problems it faces recognized, and realistic plans to deal with these problems made ready. At any cost, it must not be abandoned due to misinformation, nor can we allow it to be misdirected. Civil defense can be a potent deterrent to an aggressor and our means of national survival in a thermonuclear war."

DIRECTOR DURKEE DESCRIBES THE MEANING OF CIVIL DEFENSE, in *Department of Defense—Office of Civil Defense Information Bulletin*, no.129 (19 February 1965) pp.1-6.

Text of an address given by William P. Durkee, Director of Civil Defense, at a two-week national Security Seminar conducted by the Industrial College of the Armed Forces in Lincoln, Nebraska in February 1965.

FUNCTIONS AND RESPONSIBILITIES IN CIVIL DEFENSE, by E. R. Brooks. Durham, North Carolina, Research Triangle Institute, 1963. 16 p. (Research Memorandum RM-134-1.)

Prepared for Office of Civil Defense under OCD Contract No. OCD-OS-62-144, Task 5, Project 4630 (RTI/OU-134A).—"This paper reviews the principal documents defining responsibilities for civil defense and summarizes functions in nonemergency, pre-attack emergency, and post-attack situations. Some of the functions for which clarification is needed regarding the extent or location of responsibilities are noted." The principal documents referred

to are: Public Law, Executive Orders, DOD Directives, and Bureau of Budget Memorandum.

WHAT IS CIVIL DEFENSE? by Lt. Gen. Clarence R. Huebner, in *Military Review*, v.42, no.2 (February 1962) 65-72.

"Civil defense is the combined effort of our governments at all levels and the people to assure ourselves that we will not be destroyed by a hostile power equipped with weapons of destruction that pose the issue of survival to the rest of the world. A realistic, thoroughly organized program is essential to our national security . . . Civil defense's mission is to prepare for the operation of civil government in time of war. Preparation and operation extends from the Federal Government down through all governments to include towns and villages." Discusses: Wartime Missions; National Plan; Emergency Operating Centers; Continuity of Government; Warning Systems; Civil Defense Director; CONELRAD; Rescue and Relief Operations; Radiological Services; Mobile Monitor Teams; and Recovery After Attack.

Durkee, William P. **WHAT YOU SHOULD KNOW ABOUT CIVIL DEFENSE**. *National Defense Transportation Journal*, v.20, Nov./Dec. 1964: 26-28, 30-31.

Explains the U.S. civil defense effort, including the National Shelter Survey, warning systems, plans for the detection of radiological fallout, and the organizational philosophy of the program. (Extracted from: *Arms Control & Disarmament*, v.1, no.2.)

4. *Status of the Civil Defense Program (See Also Appendix A)*

ADDRESS BY JOSEPH ROMM, ACTING DIRECTOR OF CIVIL DEFENSE, OFFICE OF THE SECRETARY OF THE ARMY TO THE CONFERENCE ON EMERGENCY PLANNING IN INDUSTRY, MOBILE, ALABAMA, MAY 25, 1967. Washington, Office of the Secretary of the Army, Office of Civil Defense, 1967. 12 p.

The Acting Director discusses "those changes, those developments that have brought about the policy and philosophy of our current nationwide civil defense program," as an introduction to the major portion of the speech dealing with the status of our current nationwide civil defense program.

CIVIL DEFENSE AND SOCIETY—INTERIM REPORT, by Jiri Nehnevajsa. Pittsburgh, Pa., University of Pittsburgh, Department of Sociology, 1963. 252 p.

Prepared for Office of Civil Defense, Department of Defense, OS-62-267. The author states that: "In this report, we shall present some of the arguments which concern a national civil defense program . . . We shall consider problems of effectiveness of any Civil Defense Program. This has to do with the capability of a program to attain, to a reasonable degree, its own objectives . . . We shall look at the impact of Civil Defense upon the Cold War . . . [and] we will consider the effects of Civil Defense upon Americans and upon the nature of our society."

* CIVIL DEFENSE 1965. Washington, Department of Defense, Office of Civil Defense, April 1965. 114 p. (MP-30.)

"This document summarizes Department of Defense conclusions on the position of civil defense in the United States strategic defense structure, and the direction and scope of the nationwide civil defense program, especially during 1965." Background of the civil defense program; developing a shelter system; preparing for emergency operations; management assistance; research and development. Appended: Secretary McNamara Describes Civil Defense As Part of Nation's "Strategic Offensive and Defensive Forces" (OCD Information Bulletin No. 130); The Federal Civil Defense Act of 1950, As Amended; Executive Order 10952, as Amended (Civil Defense assigned to Secretary of Defense); OCD Regional Offices and Areas Served; State Civil Defense Directors; Record of Federal Civil Defense Appropriations; Courses Taught in OCD Schools; Colleges and Universities in the Civil Defense Extension Program; Annual Program Paper Guidance; Other Sources of Information.

NATIONAL CIVIL DEFENSE EFFORT—A STATUS REPORT, by Stewart L. Pittman, in *Signal*, v.17, no.11 (July 1963) 25-28.

"The Assistant Secretary of Defense for Civil Defense states the case for broad participation by the nation's professional engineers in the 'new' civil defense program." Partial contents: Technical Advice Is Essential; Protective Structures Work Described; School Shelter Competition Successful; CD—Continuing Defense Requirement; Shelter Survey Completed; Shelter Development Program Outlined; Balanced Program Needed; etc.

* NONDISCRIMINATION IN THE CIVIL DEFENSE PROGRAM. Washington, Department of Defense, Office of Civil Defense, 1965. 35 p. (MP-29.)

"Section 601 of the Civil Rights Act of 1964 states that no person in the United States shall, on the ground of race, color or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity which receives Federal assistance. Section 602 directs Federal agencies which extend such financial assistance to effectuate this nondiscrimination policy by the issuance of appropriate regulations. Title VI of the Civil Rights Act of 1964 is set forth as Annex 1. Pursuant to this requirement of statute, the Secretary of Defense executed his requirements since that date. The Department of Defense Regulation is set forth as Annex 2. The Directive required submission by components of the DOD of implementing regulations which would deal with specific programs and activities of the Department. Pursuant to this, the Director of Civil Defense issued OCD Regulation 32 CFR Part 1811. The OCD Regulation took effect on April 15, 1965. The OCD Regulation is set forth as Annex 3."

* OFFICE OF CIVIL DEFENSE PROGRAM; SUMMARY. Washington, Department of Defense, Office of Civil Defense, 1966. 38 p.

This pamphlet "constitutes a summary of the Civil Defense Program for FY 1966. The structure of the program is based upon the three major components of a comprehensive civil defense effort, viz. fallout shelter, warning and emergency operations. Within each of these major components more detailed information is provided for sub-programs and line items and in some instances projects and tasks. In addition, a fourth category of activities is included which is composed of those support activities necessary to the successful execution of the substantive program components identified above."

STATUS OF THE CIVIL DEFENSE PROGRAM. Washington, Department of Defense, Office of Civil Defense, January 1967. 22 p. (MP-46.)

This document was developed as a brief report to interested Congressmen on the status of the Civil Defense Program. All information is as of January 1967. I. Program keystones; II. The Background (Program Evolution; Focus Today); III. The Foreground (Lifesaving Potential of Fallout Shelter; Developing the Shelter Resource; Preparing to Use Shelter; Improving the System; Shelter and Active Defense; OCD Appropriations; Proposed FY 1968 Program); IV: Acceptance (State and Local Governments; Building Owners; Architects and Engineers; General Public); V. Statistical Summary. [For Sta-

tistical Summary see appendix.]

WHAT HAPPENED TO CIVIL DEFENSE, by Elizabeth Brenner Drew, in *The Reporter*, v.32, no.7 (8 April 1965) 37-40.

"Stops and starts have plagued the civil-defense program since January 12, 1951, when President Truman signed the first postwar Civil Defense Act. Ten years and some \$600 million later, warning and communications systems have been built, but little lasting progress had been made. The responsibility for civil defense had been shunted from one government agency to another . . . Both McNamara and the President have said that civil defense is important. But the President also sets a high priority on other objectives essential to the national interest . . . With a proposed expenditure of \$1 billion on continuing research and development, the President and Secretary McNamara have, in effect, bought another year's delay on defensive systems while McNamara attempts to study more closely the staggering costs and the arcane technological problems involved. He is caught between the clashing pressures of strategic, economic, and emotional considerations that have always characterized this troublesome issue. Until the Secretary can come up with a completely persuasive case that would reconcile these widely divergent interests, civil defense will remain in limbo."

5. *Organization and Administration (See Also Appendixes D and E)*

ASSIGNING CIVIL DEFENSE RESPONSIBILITIES TO THE SECRETARY OF DEFENSE AND OTHERS, by President John F. Kennedy. Washington, The White House, July 20, 1961. 4 p. (Executive Order 10952.)

Section 1. Delegation of Authority to the Secretary of Defense. Section 2. Civil Defense Responsibilities of the Office of Civil and Defense Mobilization. Section 4. Transfer of Property, Facilities, Personnel and Funds. Etc.

DEFENSE SUPPLY AGENCY SUPPORT OF CIVIL DEFENSE, by James Somes, in *The Review*, v.42, no.4 (January-February 1963) 16-17 plus.

"During the earliest formative period of the Defense Supply Agency's existence, a mission was assumed which, although non-military in scope, was not foreign to the operational interests of the Agency. This was the transfer of responsibility from the Office of the Assistant Secretary of Defense (Civil Defense) for central management of Civil Defense stockpile material owned by the Department of Defense. Since the establishment of the Federal

Civil Defense Act of 1950, civil defense—stockpiles of engineering and radiological, chemical, and biological equipment and supplies have been progressively developed by the then Office of Civil and Defense Mobilization and later, by redesignation in August 1961, the Office of the Secretary of Defense. By Memorandum, dated 9 February 1962, the Assistant Secretary of Defense (Installations and Logistics) transferred the managerial aspects of this program to the Director, Defense Supply Agency. This new responsibility entailing material accountability; and the functions of receipt, storage, and issue; and maintenance, repair, and disposal were subsequently assigned to the Defense General Supply Center, Richmond, Virginia."

* **A DESCRIPTION OF THE SYSTEM AND MANAGEMENT REPORTS FOR EVALUATION OF CIVIL DEFENSE PROGRAMS AND ORGANIZATIONS**, Volume I, by John Clear and Francis J. Greehan. Menlo Park, Calif., Stanford Research Institute, 1965. 81 p. (SRI Project No. 5049.) User's Manual.

Contract No. OCD-PS-64-248. "This volume provides a description of the Program and Organizational Evaluation System of the Office of Civil Defense Integrated Management Information System (IMIS). It is a management guide containing instructions for preparing and utilizing IMIS management reports, and describing a fully operative system of use to all levels of civil defense management." Illustrations. Appendixes.

FEDERAL CIVIL DEFENSE ORGANIZATION; THE RATIONALE OF ITS DEVELOPMENT, by Robert A. Gessert and others. Arlington, Va., Institute for Defense Analyses, Economic and Political Studies Division, 1965. 100 p. (IDA/HQ 65-3480, Study S-184.)

This study represents part of a research program of analyses of alternative civil defense systems conducted for the Office of Civil Defense under Contract No. OCD-OS-63-134. "This study examines the Federal organization of civil defense as it has developed between passage of the Federal Civil Defense Act of 1950 and the beginning of 1965. The objectives of this investigation have been to analyze the evolving organizational concepts to discuss the basic issues underlying them, and to identify the principal organizational alternatives which have been considered." With: A Civil Defense Chronology, and Selected Bibliography on Civil Defense.

INTERGOVERNMENTAL CIVIL DE-

FENSE ORGANIZATIONS AND PROGRAMS by Lawrence A. Williams and others. Washington, National League of Cities, 1965. 304 p.

Contract No. OGD-PS-64-52; Subtask 4412-B. "This study describes the number and types of local government units and the jurisdictional impediments to the effective performance of local services. It examines the major alternative approaches to local government jurisdictional reorganization and the advantages and disadvantages attributed to each. Three area-wide, inter-local government civil defense agencies are examined on a case study basis. Each agency is representative of one of the three major types of area-wide agencies commonly found in the United States. Each case study includes a profile of the area served by the civil defense agency to establish its essential characteristics and to identify exceptional circumstances peculiar to the area which may effect the civil defense organization and capability. Emphasis is placed upon local government organization, powers, and intergovernmental relationship. In the descriptions of the area-wide civil defense agencies, particular attention is given to (1) the role of the state, (2) methods of policy formulation at the local level, (3) arrangements for politically responsible supervision, (4) arrangements for establishing authority for unified and coordinated emergency operations, (5) procedures for allocating costs among participating governments, and (6) the increments in civil defense capability resulting from the ability to develop rational plans on an area-wide basis. Lastly, this study examines the views of local elected officials in eight Standard Metropolitan Statistical Areas relative to the area-wide performance of key local government services, including civil defense, and their views about a number of civil defense organizational patterns." Bibliography.

ORGANIZATION AND FUNCTIONS OF OFFICE OF CIVIL DEFENSE. Washington, Department of the Army, Office of the Secretary of the Army, March 1967. 109 p. (OGD Manual 5110.1.)

This manual is the official document of the organization of the Office of Civil Defense and constitutes the approved assignment of functions within the Agency. Includes organizational chart.

ORGANIZING MUNICIPAL GOVERNMENTS FOR CIVIL DEFENSE, by Andrew S. Bullis and Lawrence A. Williams. Washington, American Municipal Association, 1963. 318 p.

Contract Number OGD-OS-62-293.—"The study describes the civil defense responsibilities of municipal government as defined by present federal

programs and policies, especially as they relate to the fallout shelter program. Six cities are then analyzed to determine the manner in which community resources have been organized to meet the responsibilities. The cities were selected to represent the several common forms of city government and to provide a wide geographic distribution and spectrum of population sizes from the very small to the large metropolitan city. Each case study provides a profile of the city to establish its essential characteristics and identify any exceptional circumstances that may be peculiar to the city and affect its defense capabilities. The preparations made by the city for government operations in the event of nuclear or natural disaster are investigated, including continuity of government, emergency powers, and the civil defense agency, its financing, program, and facilities for emergency operations. The emergency operations or survival plans of each city are related to the assignment of its regular departments and agencies to emergency and disaster functions. The utilization made of volunteers and non-governmental agencies, organizations, and institutions to augment and supplement city forces is described. Finally, the relationships established between the city and other governmental jurisdictions and the effects on these relationships on the city program are evaluated. The study identifies major problems being encountered by the cities in building their civil defense capability and recommendations are suggested to overcome these problems." With bibliography.

PREDICTION OF ROLE PERFORMANCE OF LOCAL CIVIL DEFENSE DIRECTORS, by Gerald E. Klonglun and others. Ames, Iowa, Iowa State University of Science and Technology, 1964. 53 p. Contract No. OGD-OS-62-150. A Summary of the Final Report.

"The general purpose of the report is to provide useful, analytical information about factors which may affect the role performance of local civil defense directors. To help accomplish the general purpose of this report five specific objectives were established: 1. Develop an analytical *frame of reference*, or model, which may be used in understanding factors (independent variables) which may affect the role performance of local civil defense directors . . . 2. Determine the *role expectations* held for local civil defense directors . . . 3. Determine the *actual role performance* of local civil defense directors . . . 4. Determine through use of the analytical frame of reference those factors . . . which are related to the role performance of local civil defense directors . . . 5. To

predict the role performance of local civil defense directors . . ." Findings.

A SYSTEMS ANALYSIS OF CIVIL DEFENSE ORGANIZATION AT THE REGIONAL, STATE, AND LOCAL LEVELS: INITIAL REPORT: SYSTEM DEFINITION AND PROBLEM IDENTIFICATION, by Arthur A. McGee and Richard C. Katz. Menlo Park, Calif., Stanford Research Institute, 1965. 90 p. (SRI Project MU-4949-410, Mu-4533-432.)

Prepared for Office of Civil Defense, Department of the Army, Contract OCD-PS-64-201, OCD-OS-63-149.—"This initial report presents a broad analysis of the civil defense system and organization at the regional, state, and local levels of government. From this analysis the study identifies major system problems with organizational implications and discusses, but does not quantitatively evaluate, alternative solutions to these problems." With bibliography.

A UNIFIED ORGANIZATION FOR CIVIL DEFENSE (U), by Col. Ellis B. Pickering. Carlisle Barracks, Pa., US Army War College, 1962. 64 p. (Student Thesis AWC LOG #62-2-150-U.)

Examines the factors that determine the proper organizational structure required to plan and conduct the civil defense mission. The role of civil defense; organizational development; military participation; functional and organizational analysis; a unified concept of organization (national level and field level). Appended: Organization for Civil Defense in the USSR; Recommended Organization for Civil Defense in the US. Bibliography.

6. *Planning and Programs*

ALTERNATIVE CIVIL DEFENSE PROGRAMS AND POSTURES; FINAL REPORT, by William M. Brown. Harmon-On-Hudson, N.Y., Hudson Institute, Inc., 1964. 30 p. (HI-361-RR/1.)

"This report begins by presenting a spectrum of possible CD programs, ranging from a Minimum (approximately the current survey shelter program) based on a \$200 million budget to a Maximum sustained national effort, limited only by available resources. The major components of each program are listed with estimated budget requirements. To place these alternatives in perspective some aspects of future contexts within which they might appear desirable are described in Part I . . . The second part of the paper selects seven specific postures based upon the program alternatives and describes them in terms of the fallout and blast protection achieved

prior to an attack." References. Charts and tables.

Durkee, William P. CIVIL DEFENSE IN NORTH AMERICA: UNITED STATES. EMO national digest, v.5, Dec. 1965:21-22, 24.

Text of presentation before the Conference of the California Defense and Disaster Association, Sept. 1965.

Highlights of the U.S. program given by the Director of the Civil Defense, Office of the Secretary of the Army. Mr. Durkee upholds "the theory that civil defense is organized within the legal structure of representative government," and cites proposals for expansion and specific acts by which this can be achieved. (Extracted from: Arms Control & Disarmament, v.2, no.3.)

CIVIL DEFENSE PLANNING FOR SURVIVAL AND RECOVERY, by Donald W. Mitchell. Washington, Industrial College of the Armed Forces, 1966. 217 p.

The chapters are: The Nature of the Threat; The Development of Civil Defense; The New Image of Civil Defense; Postattack Rehabilitation; Civil Defense Studies and Proposals. Among the appendixes: Department of Defense Directive No.3025, 29 March 1965, subject: Military Support of Civil Defense. With suggestions for further reading, illustrations, and tables.

CRASH CIVIL DEFENSE PROGRAM PLANNING, by K. E. Willis and others. Durham, N.C., Research Triangle Institute, 1964. v. 5 (R-OU-137.)

Prepared for Office of Civil Defense, United States Department of the Army, under Office of Civil Defense Contract No. OCD-OS-63-118.—V.I Final Report; V.II The Analysis and Construction of a Strategic Warning Civil Defense Plan for Lincoln, Nebraska; V.III. The Analysis and Construction of a Strategic Warning Civil Defense Plan for San Diego, Calif.; V.IV. The Analysis and Construction of a Strategic Warning Civil Defense Plan for Montgomery County, Maryland; V.V. Summary Report. "A crash civil defense program is one which is implemented one to fourteen days prior to attack. It is initiated because of a political or military crisis. Volume I of this study identifies and analyzes measures that can be effective in this time period in dispersing and protecting population and resources. The problems associated with constructing a crash plan prior to implementation are identified, and principles for crash planning are given. Actions are recommended which would lead to opera-

tional crash planning. The major conclusion is that crash planning can significantly improve existing civil defense capabilities. Volumes II, III and IV of this study utilize the information contained in Volume I to construct crash plans for Lincoln, Nebraska, San Diego, California, and Montgomery County, Maryland."

* **EFFECTIVE CIVIL DEFENSE.** Cambridge, Mass., Harvard Graduate School of Business Administration, 1962. 323 p. (Manufacturing Group Six.)

"This report presents a review of the development of civil defense in this country, a consideration of the threat which faces the nation, an evaluation of the specific areas where civil defense is needed for the survival of this country, a presentation of an effective program of civil defense, and, finally, a description of techniques for implementing the recommended program." Bibliography.

EMERGENCY PLANNING, by Edward A. McDermott, in *Military Review*, v.44, no.2 (February 1964) 19-28.

"What has happened in non-military defense over the past 15 years can be likened in some measure to the science of warfare. In fact, our early military history furnishes an excellent parallel to the non-military field. It is the consensus among military historians that the conventional techniques of World War II had their origins in the United States Civil War of 1861-65... In the late 1940's and early 1950's the US Government became aware that this country had a major nonmilitary defense problem. This period saw the creation of the National Security Resources Board (NSRB)... Later in 1950, the Defense Production and Civil Defense Acts—resulted in the creation of the Office of Defense Mobilization (ODM), which subsequently became the successor to NSRB, and the Federal Civil Defense Administration (FCDA)." The author traces the merger of various agencies dealing with nonmilitary defense and how the Office of Civil and Defense Mobilization (OCDM) split into the Office of Civil Defense (OCD) and the Office of Emergency Planning (OEP), which dates from 20 July 1961. The balance of the article is devoted to the functions and operations of OEP.

JOINT UNITED STATES/CANADA CIVIL EMERGENCY PLANNING COMMITTEE, in *EMO National Digest*, v.6, no.4 (August 1966) 1-7.

The documents included here "were presented at the annual meeting of the Joint United States

Canada Civil Emergency Planning Committee, held in Ottawa on June 7, 1966. Governor Farris Bryant, Director of the Office of Emergency Planning and Mr. W. P. Durkee, Director of the Office of Civil Defense headed the group of eight senior United States Officials; Canada's senior emergency planners were headed by Mr. C. R. Patterson, Director General, Canada Emergency Measures Organization, and Chairman of the Meeting." Papers included: Review of United States National Civil Emergency Planning Activities Since Last Meeting (OEP Report CEPC D/1-66); Review of United States Civil Defense Activities Since Last Meeting (OCD Report CEPC D/2-66); and Review of Civil Emergency Planning Activities in Canada Since October 1965 (CEPC D/3-66).

MANAGEMENT REQUIREMENTS FOR CRISIS CIVIL DEFENSE PROGRAMS, by Frederick C. Rockett. Croton-on-Hudson, N.Y., Hudson Institute, 1966. 30 p. HI-612-RR.) Prepared under contract No. OCD-PS-65-75, Subtask No.4211-C.

"This report discusses the subject of peacetime preparations for the management of potential crisis civil defense programs. It contains a discussion of the size and nature of emergency tasks, federal implementation roles and some management strategies. The primary goal is to show the importance of peacetime preparations for effective management of emergency programs..." Appended: Two Possible Resources for Construction Management; Construction Requirements for 100 Million Blast Shelter Spaces; The Alaskan Earthquake Reconstruction Effort.

A NEW LOOK AT THE DESIGN OF LOW-BUDGET CIVIL DEFENSE SYSTEMS, by William M. Brown. Harmon-on-Hudson, N.Y., Hudson Institute, Inc., 1965. 38 p. (HI-478-RR.)

Prepared under Contract Number OCD-PS-64-116 for the Office of Civil Defense, Department of the Army.—"The feasibility of designing highly effective low-cost C.D. systems is examined in relationship to various war outbreak scenarios and the utility of the associated preattack warning period. It is argued that with moderate confidence such highly effective systems can be designed. They would depend upon a general mobilization of civilian resources during an emergency to greatly expand and improve any existing C.D. capability. Ideally such designs can visualize attaining the goal of zero casualties; however, a dynamic plan would contain

several options to handle the many imperfections which would almost certainly appear during implementation. The essential elements of the C.D. designs are examined separately for technical, political, administrative, and strategic feasibility. It is concluded that this approach offers substantial promise for future C.D. developments."

TESTING CIVIL DEFENSE PLANS AND OPERATIONS AT THE FEDERAL, STATE AND LOCAL LEVELS. Stamford, Conn., Dunlap and Associates, Inc., 1963. 121 p.

Prepared for Office of Civil Defense, Department of Defense, Contract OCD-OS-62-60.—"The contract for this study defined the problem as developing techniques for testing operational plans at the federal, state, and local levels of civil defense command . . . The research effort of this study was first directed towards defining several functions of civil defense with the objective of developing techniques to test the accomplishment of functions . . . Chapter I is devoted to a brief discussion of the overall problem . . . Chapter II presents descriptions of the three tests developed during the study, i.e., a Mustering Plan test, a Damage Assessment test, and a Radiation Analysis test. The final chapter presents the formulation of a system analysis of the civil defense organization designed to identify and quantify those functions with which Civil Defense should be concerned, and thus to provide a better basis for testing of plans." With figures and tables.

7. Public Information Requirements

ANALYSIS OF A CIVIL DEFENSE INFORMATION SYSTEM, by E. R. Brooks and others. Durham, N.C., Research Triangle Institute, Operations Research and Economic Divisions, 1964. 70 p.

Prepared for Office of Civil Defense, U.S. Department of the Army under Office of Civil Defense Contract No. OCD-OS-62-144, Task 5, Subtask 4631A, RTI Project R-00-134.—"This document reports the first phase of a study to define an information system for civil defense emergency operations. In the study, principles for the definition of information requirements were reviewed for application to the problem. Examination of the functions, organization, and probable environment for civil defense operations led to the identification of certain categories of decisions and specific decisions to be made at various echelons. These in turn implied types of information that would be needed. An examination was then made of the potential capabilities for obtaining the information through present provisions

as identified in civil defense plans and exercises. These provisions include damage assessment based on weapon detonation data, damage reports, radiation monitoring reports, situation summary reports, and action reports. Provisions for information processing and display within emergency operations centers were also examined. It was found that present provisions for information are generally not directed toward making specific types of operational decisions. Much of the information that may be transmitted would be useless for decision making. In other cases, failure to provide for assessment of the reliability of the information would result in delayed decisions or possibly in incorrect decisions. Some general recommendations are made for improvement of the provisions for messages and information flow within emergency operations centers."

CIVIL DEFENSE INFORMATION SYSTEMS ANALYSIS (A FEASIBILITY STUDY OF RESEARCH INFORMATION EXCHANGE), VOLUME I OF A TWO VOLUME FINAL REPORT, by W. T. Herzog and J. E. Jenkins. Durham, N.C., Research Triangle Institute, 1965. Various paging. (R-OU-158-1.)

Prepared for Department of the Army, Office of Civil Defense under OCD Contract OCD-PS-64-56, OCD Subtask 4631B. "A feasibility study was performed of a civil defense scientific and technical information system that will insure the ready availability of information to all pertinent OCD elements and to contract research personnel. A brief analysis of scientific information systems is presented as background for a discussion of the present civil defense information system. The potential sources of civil defense information are listed. The civil defense information system is defined to be the relationships or exchange between the sources of civil defense information and the users of this information. Methods for improving this exchange are presented. These suggestions include the establishment of an information analysis center, the printing of a quarterly technical progress review, and the use of a standard report format and indexing procedures. To foster standard indexing procedures, a 'Thesaurus' forms the second volume of this two volume report." With bibliography.

THE IMPACT OF CIVIL DEFENSE INFORMATION I: AN EXAMINATION OF INFORMATION LEVELS, by Dorothy B. Rothenberg. Pittsburgh, University of Pittsburgh, Department of Sociology, 1966. 81 p.

Prepared for Office of Civil Defense, Office of the Secretary of the Army, Research Subtask 4812-B, OCD-OS-63-48.—“The purpose of this report is to study the impact of Civil Defense information in terms of information levels. It examines levels of information about CD, cold war, effect of nuclear weapons, and arms control and disarmament efforts. Subjective levels of information on these four issues, based on a national block sample's self-imputed information are compared with objective levels of information determined by other researchers, and these two measures of information levels are found to be compatible. While there is no way of knowing whether information people think they have is accurate, those who tend to feel they are informed about CD are women as well as men, Negroes as well as non-Negroes, those at all but the lowest level of education, those at all levels of income. The most important personal factors are related to respondent's age. Those who have high subjective CD information display a greater optimism about the future and are less inclined to want World War III or a Communist surrender because of U.S. technological supremacy; they favor all shelter programs and tend to feel that the present warning system is very good. The findings imply that: (1) there is little need to try to convince the American people that CD measures are desirable or warranted; (2) CD messages can afford complete frankness in depicting to the nation both the promise and the limitations of protective measures. In addition, there is an indication that the fundamentally favorable perceptions of CD are not detrimentally affected by misinformation.” With list of sources.

PUBLIC INFORMATION AND KNOWLEDGE REQUISITES OF A SHELTER SYSTEM (FINAL REPORT), by Emil Bend and others. Pittsburgh, American Institutes for Research, Institute for Performance Technology, Social Systems Program, 1966. 118 p. (AIR-D-93D-9/66-FR.)

Prepared for Office of Civil Defense, Department of the Army under Contract No. OCD-PS-64-57, OCD Work Unit 1534A.—“This study of public information requirements for effective use of the shelter system is comprised of three separate but related parts. The first is an analysis of the types of items that make up the minimum required public information content for effective shelter system use. Public information in regard to threat warning, shelter-taking, and in-shelter survival is discussed. The audience for shelter information, the timing of shelter information campaigns, and the media for public information are also discussed. The second part of

the report consists of a description of a shelter information study, in which 278 volunteers for AIR shelter research projects were interrogated on the nature and extent of their information and misinformation about shelter-related subject matter. Questions were asked about knowledge of warning signals, emergency communications, shelters and shelter supplies, fallout and its effects. The last section of the report contains the results of a content analysis performed on 25 civil defense pamphlets on the fallout shelter issue available to the public between 1959 and the present time. The purpose of the analysis was to discover the emphases and trends in the shelter-related guidance that the Government has made available to the public.” With references and tables.

8. *Public Alert and Warning Systems*

CIVIL DEFENSE COMMUNICATIONS RESEARCH; FINAL REPORT OCTOBER 1965, by K. Curtin and L. Siegel. New York, Radio Corporation of America, Defense Electronics Products, Communications Systems Division. October 1965. 24 p. (Task 1, OCD Work Unit Numbers 2211B.)

“The survivability problem of a communications system—from the viewpoint of analysis—is defined as the problem of relating varying levels of destruction to surviving traffic handling capability. Using linear graph concepts, three network survivability design parameters are specified and then related to varying levels of destruction. A procedure is then provided for translating surviving ‘connectivity’ into a traffic-handling measure—the Priority Completion Index.”

CIVIL DEFENSE COMMUNICATIONS RESEARCH; TASK 7. FINAL REPORT OCTOBER 1965, by K. Curtin and L. Siegel. New York, Radio Corporation of America, Defense Electronics Products, Communications Systems Division, 1965. 71 p. (OCD Work Unit. No. 2211B; Report No.: CR-65-419-21, Volume II.)

“The concept is developed for analyzing and evaluating the evolving Civil Defense Communications System through periodic system evaluation exercises. A feasible method is presented for measuring operational capabilities using obtainable information about system characteristics, operational environments, and user needs. Appropriate criteria of system effectiveness are specified to allow selection of ‘optimum’ system configuration and to provide the basis for evaluation of future systems and techniques for possible inclusion in the Civil Defense

Communication System."

CIVIL DEFENSE PUBLIC ALERT AND WARNING BY RADIO, by L. Siegel. New York, Radio Corporation of America, Communications Systems Division, New York Systems Laboratory, 1963. Various paging. (Interim Report No. 1, Report No: CR-63-419-8.)

Prepared for Department of Defense, Office of Civil Defense, Contract No. OCD-OS-63-54.—"The use of radio for alerting and warning the public of civil defense emergencies is shown to be technically feasible at a per capita expenditure of less than \$10. Standard broadcast radio is the basis of the warning element and either standard broadcast or low frequency radio is the basis of the alert element. Several optional system configurations are described, of different cost and effectiveness, to realize rapid and responsive public warning by radio. A program is recommended to carry on the development of a comprehensive radio warning system, based on the use of the public's broadcast radio receivers operated in conjunction with alert receivers to be provided." With: references and exhibits.

CIVIL DEFENSE REQUIREMENTS STUDY. Santa Monica, California, System Development Corporation, 1963. 319 p. (TM(L)-900/001/01.)

Contract No. OCD-OS-62-119. Under the contract the System Development Corporation was required to prepare an analysis of the DOD-OCD warning system, with the principal objective of determining system requirements for an effective warning system to meet present and future needs.

DEVELOPMENT OF PROCEDURES FOR NON-ALERT TESTING OF OUTDOOR ATTACK WARNING SYSTEMS; FINAL REPORT, by W. Sattler. Flint, Mich., General Motors Corp., AC Spark Plug Div., 1962. 39 p.

Department of Defense, Office of Civil Defense Contract No. OCD-OS-62-50.—"In recent years attack warning authorities have become increasingly aware of the detrimental effect caused by testing outdoor warning devices by actually sounding the public action signals. They have found that with every test more individuals learn to associate the sound of these signals whenever heard, with mere tests of the system. The Office of Civil Defense has, in an approach to solving the problem, ordered this development of alternate testing methods. This study has as its objective the development of procedures for testing the readiness of attack warning

devices and systems without producing warning signals which the public can confuse with an actual warning. . . . This study has resulted in establishing two concepts for non-alert testing all outdoor warning systems that are being used at the present time. The concepts are 'Silent Testing,' which is a test of the system up to the sound producers, and 'Minimum Sound Testing' where all parts of the system are energized . . . as a test sound of minimum dimensions is produced." With: illustrations, appendixes, and tables.

* **EMERGENCY BROADCAST SYSTEM PLAN**. Washington, Department of Defense, Office of Civil Defense, 1964. Various paging (FG-E-4.1.)

"This plan for an Emergency Broadcast System has been prepared pursuant to Executive Order 11092, signed by the President of the United States on February 26, 1963, and is based on the requirements of the White House, the Department of Defense (Office of Civil Defense), the Office of Emergency Planning, and Provisions of the FCC Rules and Regulations . . . The Emergency Broadcast System has been devised to provide the President and the Federal Government, as well as State and local governments, with a means of communicating with the general public through nongovernment broadcast stations during the period preceding, during, and following an enemy attack. Mass communications from such sources might include, but not be limited to, messages from the President or other Federal officials, national, regional, State, and local area instructions, news and information. The Emergency Broadcast System has been designed to provide operational capability for local, State and national (including regional) units of the government to communicate with the general public within their respective jurisdictions. This plan provides for utilizing facilities and personnel of the entire nongovernment communications industry on a voluntary basis to provide the nation with a functional system to be operated by the industry under appropriate government regulation and in a controlled manner consistent with national security requirements during a national emergency."

* **FREQUENCY ALLOCATION PLAN FOR THE RADIO AMATEUR CIVIL EMERGENCY SERVICE (RACES)**. Washington, Department of Defense, Office of Civil Defense, 1961. 9 p.

This pamphlet "outlines a frequency allocation plan for stations in the Radio Amateur Civil Emer-

gency Service (RACES). The plan is designed to: (1) Make efficient use of the skilled radio amateurs throughout the Nation; (2) Minimize communications interference; and (3) Provide maximum use of those amateur frequencies earmarked for civil defense communications (RACES) during an alert, natural disaster, or national emergency, as directed by the civil defense authority. In peacetime, stations in RACES share these frequencies with the regular amateur service."

THE NEAR SYSTEM: A STUDY OF PUBLIC ACCEPTANCE, by Jiri Nehnevajsa. Pittsburgh, Pa., University of Pittsburgh, Department of Sociology, 1964. 96 p.

Contract No. OCD-OS-63-48. "The NEAR System study reported here was conducted in late 1963 and early 1964 in a sample of 1,402 Americans interviewed on behalf of the University of Pittsburgh by National Opinion Research Center of the University of Chicago. The study reveals high receptivity to the idea of a home alerting system, and to the specific NEAR receiver tested. Americans claim that they would be likely to acquire such a device. Differences among various population subgroups are only subtle, and none run in entirely opposing directions. In fact, the actual NEAR receiver, once shown, generates a more favorable response than does the concept of a home alerting system as such. As might be expected, the public is most responsive to the idea of free distribution by the Government . . ." Tables and appendixes.

PROGRAM PLAN FOR EFFECTIVE CIVIL DEFENSE COMMUNICATIONS, by K. Curtin. New York, Radio Corporation of America, Communications Systems Division, New York, Systems Laboratory, 1964. 45 p. (Report No. CR 64-419-17.)

Final Report Contract Item 2a, prepared for Stanford Research Institute, Menlo Park, Calif., and sponsored by Office of Civil Defense, Office of the Secretary of the Army, Contract No. OCD-PS-64-18.—"A program plan is formulated to provide the Office of Civil Defense with the information necessary to reach agreement as to what is needed to adapt domestic communications for emergency operations. The plan, consisting of thirteen tasks, directed towards the elimination of known areas of weakness, is estimated to cost approximately \$2.5 million to implement at developmental and management support levels. In view of civil defense budgetary limits at the time of writing, a recommendation is made on the order of initiating tasks on the basis of feasibility

and urgency." With: references, and illustrations.

PYROTECHNIC OUTSIDE WARNING SYSTEM. Falcon Field, Mesa, Arizona, Rocket Power, Inc., 1963. 38 p.

Contract No. OCD-OS-62-76. Final Report—Phase I. "The POWS [Pyrotechnic Outside Warning System] was conceived as a complement to the National Emergency Alarm Repeater System (NEARS), which will provide indoor warning. The POWS is designed to meet the need for a mass, low-cost outdoor alert system which can provide instant audible and visual warning, day or night." Appended: specification for POWS.

RADIO WARNING SYSTEM INTERFACE STUDY, by Dan G. Haney and others. Menlo Park, Calif., Stanford Research Institute, 1965. 68 p. (SRI Project No. MU-5071.)

Prepared for Office of Civil Defense, Department of the Army, Contract No. OCD-PS-64-233.—"The report analyses the relationship between a national radio warning system and the following civil defense programs: 1—shelter programs, 2—emergency operating centers, 3—communications systems, 4—the present civil defense warning system, 5—public information programs. Conclusions in the report relate to warning system response time; effects of deficiencies in shelter spaces upon system coverage; need for use of radio warning system during a period of confinement to shelter; role of the radio warning system in passing postattack messages to the public; possible requirements for input points at different levels of government; use of different communications systems for different—yet concurrently performed—functions in a postattack period; possibility of using other OCD and DOD communications systems for warning; procedures for initiating alert and warning signals; effect of public awareness of civil defense systems upon warning; and feasibility of providing inputs for last-ditch warning from Nike-X."

RESPONSE OF POPULATION TO OPTIMUM WARNING SIGNAL, by Herbert J. Ayer and Edward J. Hardick. East Lansing, Mich., Michigan State University, 1963. 171 p. (SHSLR163.)

Final report, Office of Civil Defense, Contract No. OCD-OS-62-182. "The concern of this research was to determine the alerting potential of auditory signals, with particular emphasis on the differential response of humans to changes that were made in the acoustic parameters of signals. Four hundred audio signals were recorded for evaluation. Judge-

ments of alerting potential were obtained from 1250 people under various listening conditions. The results suggested conclusions that specify the frequency, intensity, and time ranges within which the development of optimum audio warning signals should occur. Estimates were made of differential response to sonic warning as it related to age, occupation and ambient noise conditions. Lists of sounds rank-ordered on the basis of judged alerting potential are included." With: tables, figures, and bibliography.

THE ROLE OF COMMUNICATIONS IN CIVIL DEFENSE, by Harry E. Roderick, in *EMO National Digest*, v.6, no.1 (February 1966) 5-8.

"Adequate and effective communications are an essential, indispensable element for emergency survival. All civil defense actions keyed to warning are dependent upon communications . . . Since OGD is a part of the Department of the Army, all Federal civil defense communications requirements are now a responsibility of the U.S. Army Strategic Communications Command . . . OGD is directly concerned with the establishment and operation of four principal communications—NAWAS [The National Warning System], NACOM 1 [The Civil Defense Telephone and Teletype System], NACOM 2 [The Civil Defense Radio System], and EBS [The Emergency Broadcast System]. A brief explanation of each communications system . . . [is provided]."

9. Research and Development

a. Selected Examples

ANNUAL PROGRESS REPORT CIVIL DEFENSE RESEARCH PROJECT MARCH 1965-MARCH 1966. Oak Ridge, Tenn. Oak Ridge National Laboratory, November 1966. 190 p. (ORNL-TM-1531; Part I.) Contract No. W-7405-eng-26.

"The Oak Ridge National Laboratory Civil Defense Research Project, jointly sponsored by the Department of Defense and the Atomic Energy Commission, has been in existence for approximately eighteen months. It consists of an interdisciplinary study of the problems of advanced civil defense systems which might be chosen for installation during the 1970's. During the first nine months of the project, the research was directed toward three objectives: the feasibility of urban blast shelters; the interaction of active and passive defense; and the sociological problems associated with substantially expanded civil and ballistic-missile defense systems.

¹ Eugene P. Wigner, *Civil Defense Study Group Progress Report—September 1964-March 1966*. ORNL-TM1120 (April 30, 1966) (Confidential).

A progress report containing the results of these initial studies was prepared by the then project director, Eugene P. Wigner.¹ The research program was reoriented in July 1965 toward . . . nine topics, eight of which are described in this report and its classified supplement. These subject categories, in order of their appearance in the progress report, are an investigation of postattack food production (Chapters 1 and 2); a study of the special problems of ventilation using warm humid air (Chapters 3 and 4); the possible effectiveness of biological agents against a sheltered population (Chapter 5); the social and psychological constraints on expanded civil defense programs (Chapters 6, 7, 8, and 9); the interaction of blast waves with tunnels and entranceways (Chapter 10); the effects of mass fires on blast shelters (Chapter 11); the feasibility of advanced protective systems with dual use in crowded urban areas, with a special emphasis on economic factors (Chapter 12); and the comparative effectiveness of active and passive defense and the status of active defense system design (Chapters 13 and 14). Bibliography follows each chapter.

THE CIVIL DEFENSE COUNTERPART TO A 1973 NUCLEAR WAR SCENARIO, by Sara Dustin. Harmon-on-Hudson, N.Y., Hudson Institute, 1965. 29 p. (HI-391-RR.)

"The object of this paper was to study the implementation of a particular civil defense program in an escalating crisis situation. The date selected for the test situation was midsummer of 1973 . . . [The author] postulated that a full fallout shelter program had been initiated seven years earlier, in '66. This program was to provide a space for every citizen in his neighborhood and was to be completed in eight years. Simultaneously, planning was undertaken for additional measures which could be implemented quickly in an emergency—evacuation, the transport of food and other supplies into projected reception areas, the construction of expedient and improvised shelter . . . The political-military events against which these preparations were tested were adopted from an existing escalation and attack scenario written in connection with a study of ABM. In this scenario, demands for new civil defense actions arose in an arbitrary fashion, much as they might during an authentic crisis. The aim of this study was to analyze one civil defense response which might be likely, given the history of the crisis and the resources available, and to trace the consequences of these steps in the scenario environment . . . [The author] considered both the specific nature of mea-

ures which might be taken, and their timing both in relation to each other and to the flow of crisis events . . . [The author] tried to identify the developments in the crisis which might trigger increased civil defense activity, estimated how far preparations might be completed before the main attack arrived, described hypothetical responses in several parts of the country, and calculated the disposition of people and the number of casualties in the immediate postattack period. Because of the nature of the crisis and the postulated preparations, the study focuses on urban evacuation and efforts to provide fallout shelter, food, and services in the reception areas."

* CIVIL DEFENSE: SOME LITERATURE AND AN EXAMPLE OF NEEDED RESEARCH, by James T. Tedeschi, in *Background*, v.7, no.3 (November 1963) 155-162.

"To understand and evaluate passive defense planning, it is necessary to deal with a . . . mixture of physics, engineering, biology, medicine, sociology, psychology, and economics. Civil defense problems also involve religious, moral, political and strategic (military) considerations. Much of the debate that has occurred on the topic has been engendered by the failure to discuss all of the problem areas involved. Most of the writing about shelters has been polemic; the authors attempt to support an a priori position related to strategic military planning or disarmament arrangements. There is a genuine need to objectively sift through the polemics about civil defense in order to reach conclusions about the desirability of acquiring hiding places." The author presents some of the literature on the entire subject, plus an example of needed research in his bibliographic essay.

CIVILIAN PROBLEMS IN SURVIVING ATTACK, by George A. Steiner, in *Business Horizons*, v.3, no.1 (Spring 1960) 52-61.

This article describes what the author considers to be "a major shortcoming in our defense shield. It exists in the lack of preparedness plans to survive and to rebuild our social and economic system following a thermonuclear attack. We know enough today to be sure that attention to nonmilitary defense can make extraordinary differences in damage to and revival of our society in the event of thermonuclear war. Until such time, therefore, as we can calculate practically zero probability of such a catastrophe, major attention must be given to our nonmilitary as well as our military defenses. Although progress has been made in the nonmilitary defense

area, we clearly have not done enough . . . [The author is] convinced that to meet these challenges, scholars and leaders outside government must become more interested and participate more widely in research of nonmilitary defense action programs . . . For this reason . . . [he has] suggested the establishment of a Mobilization Management Research Institute, separate but cooperating with the federal government, to assume a high responsibility in stimulating required research, study, and discussion in this area . . . This Institute, with the federal government, could overcome the deficiencies discussed in this article. The measure of success in securing an adequate nonmilitary defense position may be the saving of tens of millions of lives and the probability of a remaining viable social and economic system in the event of thermonuclear war."

* A REVIEW OF DISASTER RESEARCH, by Allen Barton. New York, Columbia University, Bureau of Applied Social Research, 1960. Various paging.

Types of disasters; a methodological classification of the studies; a methodological classification of findings of disaster studies; the problems in disaster research—a classification by time-phase and unit. Bibliography.

SHELTER OCCUPANCY STUDIES AT THE UNIVERSITY OF GEORGIA, by John A. Hammes and others. Athens, Ga., University of Georgia, Civil Defense Research, 1964. 3V.

Prepared for Office of Civil Defense, Department of the Army, under Contract No. OCD-PS-64-77, Subtask 1521A.— From 1962-1964 the University of Georgia conducted six simulated community fallout shelter occupancy tests for the Office of Civil Defense. Investigated variables included organizational and environmental factors. Men, women, and children, aged 3-70 years, participated. Recent results and overall implications for the National shelter Program are presented in this report." V.1—Final Report- V.2—A Summary of the Final Report; V.3—Appendices. V.1 contains references and a bibliography.

SOCIAL ORGANIZATION UNDER STRESS: A SOCIOLOGICAL REVIEW OF DISASTER STUDIES, by Allen H. Barton. Washington, National Academy of Sciences, National Research Council, 1963. 208 p. (Disaster Research Group. Disaster Study Number 17.)

The nature of disaster research; social roles in the emergency social system; organizational and mass

behavior in the emergency social system; the restorative social system in community disaster; formal organization and the restorative system; conclusion: future needs in disaster research. References. Tables.

SOME ASPECTS OF EFFECTIVENESS OF ACTIVE-PASSIVE DEFENSE PROGRAMS, by William M. Brown. Harmon-on-Hudson, N.Y., Hudson Institute, 1964. 23 p. (HI-381-RR.)

Prepared for the Director of Defense Research and Engineering under Advanced Projects Agency, Department of Defense, Contract No. SD-137. "This paper presents some quantitative aspects of active and passive defense, but is mostly intended as a philosophical paper to discuss some of the recent research developments in civil defense systems and their relationship to the deployment of active defense."

b. Project Harbor

Margolis, Howard. **CIVIL DEFENSE: NOTES ON PROJECT HARBOR**. Bulletin of the atomic scientists, v.22, Feb. 1966: 19-21.

Argues and cites evidence that the National Academy of Sciences' *Project Harbor Summary Report* [noted elsewhere this issue] "is not an adequately precise reflection of the body of reports that came out of Project Harbor." The findings of the Academy's summer 1964 conference were not widely distributed and received attention only when the magazine of the Greater St. Louis Citizen's Committee for Nuclear Information, *Scientist and Citizen*, published a criticism of the report. Briefly, Project Harbor recommends a greatly expanded civil defense program including blast shelters for all residents of sizable cities. The *Summary Report* appears to endorse the initiation of a "fairly large blast shelter program," although the individual conference reports "discuss" such shelters and their cost but do not positively recommend their adoption on a wide scale. Mr. Margolis suggests that the conference chairman and major contributor to the *Summary Report*, Eugene Wigner, strongly prefers a major blast shelter program and so influenced the recommendations of Project Harbor. (Extracted from: *Arms Control & Disarmament*, v.2, no.3.)

National Academy of Sciences, Washington, D. C. **CIVIL DEFENSE: PROJECT HARBOR SUMMARY REPORT; A REPORT BY A SUMMER STUDY GROUP AT WOODS HOLE MASSACHUSETTS**. Washington, National Academy of Sciences-National Research Council, 1964. 30 p.

(National Research Council. Publication 1237)

Contents.—Acceptance and impact.—Education and training.—Strategy and tactics.—Future weapons and weapons effects.—Immediate survival.—Postattack recovery.

Condenses a thousand-page report on the general subject of civil defense; its relation to other defense systems, particularly the antiballistic missile networks; and the need for a passive defense system that would have a continuing life even when confronted with new offensive weapons. The report summarizes the findings and conclusions of the study group's six panels, which covered the subjects listed in "Contents." (Extracted from: *Arms Control and Disarmament*, v.2, no.3.)

Wigner, Eugene. **CIVIL DEFENSE: WIGNER ON PROJECT HARBOR**. Bulletin of the atomic scientists, v.22, Feb. 1966: 21-22.

The following is directed, firstly, to Howard Margolis' criticism of National Academy of Sciences' *Project Harbor Summary Report* [both criticism and report noted elsewhere this issue] and the author's participation in it, and, secondly, to his interpretation of the author's views on civil defense and a blast shelter program. While the *Summary Report* contains some material personally contributed, it is by and large a product of the executive committee of the project and reflects the views of the conference participants. The summary does not explicitly recommend the building of blast shelters. Rather it describes the range of programs that could be accomplished from "the present, fallout-shelter-only posture . . . at the present rather modest level of expenditure," to the "opposite end of the spectrum . . . a system which could accommodate the inhabitants of all cities with a population in excess 250,000." In other words, 75 million people could be protected at a cost of \$20 billion. In regard to the advisability of civil defense program and "the desirability of an immediate and moderately vigorous commitment to a blast shelter program," several positive points can be made. First, the existing disparity between defensive and offensive strength can be diminished with an expanded civil defense program. Second, the Soviet Union may react to a U.S. defense buildup with increased defensive, rather than offensive, preparations of its own, which would "increase our national security vis-a-vis the U.S.S.R." Third, a U.S. civil defense program would be effective against less formidable nuclear powers, such as Communist China. Fourth, "disarmament becomes more nearly a possible policy if the con-

cealment of a few nuclear weapons does not provide the concealer with a decisive advantage and if there is at least some protection against lesser powers which may not adhere to a disarmament agreement." Fifth, existing feeble defenses make the United States susceptible to threat, coercion, and nuclear blackmail. Sixth, "if all else should fail, shelters would save untold millions of lives." (Extracted from: *Arms Control & Disarmament*, v.2, no.3.)

* **PROJECT HARBOR. REPORT OF GROUP A, STRATEGY AND TACTICS (REV.).** Harmon-on-Hudson, Hudson Institute, n.d. 90 p.

This report states that: "The major effort at Project Harbor is directed toward answering questions in regard to the technical problems of building up an effective civil defense program, with much attention also being paid to the problems of acceptance by the general population and by the Congress. In general we concluded that, given the proper military and political context, civil defense programs can be designed so as to fulfill their main function of saving lives and property and facilitating or assuring economic recuperation if war occurs... This paper will concentrate to some degree on possible central war policies considered as such a context and complement to civil defense rather than as an activity in its own right. We will also pay attention to how various civil defense policies could affect our behavior and capabilities in crisis and escalation situations, and on how we might make preparation to enhance our capabilities to achieve favorable results in such situations. We will also attempt to illuminate some important strategic issues by the use of scenarios, i.e., hypothetical political-military sequences of events. We will argue that by thus recognizing the coupling between civil and military defense, we can make national policy more integrated and more likely to further national goals." With: references, tables, and illustrations.

* **PROJECT HARBOR. REPORT OF PANEL ON EDUCATION AND TRAINING FOR CIVIL DEFENSE.** Washington, National Academy of Sciences, National Research Council, n.d. 50 p.

The panel, consisting of John K. Hemphill, Chairman, William J. Hall, Lois S. Hazell, Rabb M. Thompson, Volta W. Torrey, and Alexander Zucker, concluded: "The creation of a National Civil Defense Institute would be one of the most important steps toward an adequate education and training program. New data, new ideas, and new methods for civil defense hold out the promise of saving untold lives. At the Institute scientists from many fields

could collaborate freely in seeking solutions to the difficult problems connected with the survival of our people and our nation in case of a nuclear attack. In fact, it is suggested that if the funds for a complete program are not available, as is likely to be the case for the next few years, some support for the establishment of the Institute nevertheless be seriously considered. For example, if the total civil defense education budget should be 50M, in some future year it would appear desirable to allot at least one fourth of it to operation of the Institute."

* **PROJECT HARBOR. REPORT OF PANEL ON FUTURE WEAPONS AND WEAPON EFFECTS.** Washington, National Academy of Sciences, National Research Council, n.d. 36 p.

Participants: Dr. Harold L. Brode, Chairman, Dr. Abraham Broido, Dr. Mathew G. Gibbons, Dr. Robert J. Hansen, Dr. Arthur J. Hudgins, Dr. Clarence R. Mehl, and Leike Vortman.—"This report presents a partial review of the future prospects for various weapons and their delivery." Contents: The Waging of War; Weapons; Delivery Systems for Nuclear Weapons; Active Defense; Uncertainties Influencing Attack Planning; Warning of Attack; Thermal Effects and Fires; Comparison of Blast, Thermal and Initial Nuclear Radiation Effects; Likely Consequences of Very Large Yield Explosions in Deep Water; Fallout; Motions of Blast Shelters; Transient Electromagnetic Pulse; Hot Air, Dust and Smoke Induced by Thermal Radiation; References.

* **PROJECT HARBOR. TRAINING OF THE CIVIL DEFENSE PROFESSIONAL AND VOLUNTEER ORGANIZATIONS,** by Rabb M. Thomson. Washington, National Academy of Sciences, National Research Council, n.d. 20 p.

"This report deals with the training of the entire civil defense operating organization, and is not limited to the narrow training problems, per se. In addition, training... [is] discussed in the context of its basic aims, which involve questions of building a healthy over-all civil defense organization; of recruiting it, of bringing it to an effective state of functioning; of providing it with a steady flow of vital technological information and developments; of generating within it a basic set of civil defense doctrines."

PROJECT HARBOR; U.S. SUMMARY REPORT ON CIVIL DEFENSE, in *Civil Defense Bulletin (Australia)*, v.8, no.3 (July 1966) 31-38.

During the winter of 1962-63 the U. S. Assist-

ant Secretary of Defense for Civil Defense requested the National Academy of Sciences to organize a summer study in the field of civil defense. The study, known as Project Harbor, was under the Directorship of Dr. Eugene P. Wigner and the Deputy Directorship of Dr. Lauriston S. Taylor, Chairman of the Academy's Committee on Civil Defense. It was carried out at the Academy's study center at Woods Hole, Mass. This issue and the August issue of the Civil Defense Bulletin present a condensed version of the approximately 1,000-page report of the study group. "The group was requested to examine the likely effects of various kinds of attacks on the United States, and the present and future problems of civil defense of the country. The technologies of passive (civil) defense were considered both independently active (military) defense systems such as anti-ballistic missile systems, and, as far as time permitted, in conjunction with them." The study group was divided into six panels: Acceptance and Impact; Education and Training; Strategy and Tactics; Future Weapons and Weapon Effects; Immediate Survival; Post-Attack Recovery.

SCIENTISTS AND CIVIL DEFENSE: DIALOGUE AT BERKELEY, by John Walsh, in *Science*, v.151, no.3706 (7 January 1966) 53-57.

"Since the limited test-ban treaty went into effect in 1963, civil defense as an issue of public policy has lain practically dormant. A symposium on civil defense at the AAAS [American Association for the Advancement of Science] meeting . . . [in January at Berkeley, Calif.] may have anticipated the revival of debate, since a decision on deployment of anti-ballistic missiles is said to be imminent in Washington and an expanded civil defense program is viewed as an integral part of an ABM system. The symposium was conceived . . . as a means of meeting the scientific community's 'duty to provide our fellow citizens with an objective account of the technical data relevant to the grave issues of public policy on war and defense.' . . . Takeoff point for the symposium may be said to be the Project Harbor report produced by a summer study group at Woods Hole in 1963 . . . The full report was not widely circulated, but a summary published by the Academy, was made generally available. A 'preliminary statement' included in the summary, which appears to have attracted more attention than anything else in it, said that the present limited civil defense program was 'considered to represent a minimum level of significant protection below which a national effort may not be justified at all.' A more adequate program,

which was generally favored by the participants in the study, would include (1) shelters in target areas that are capable of protecting against blast and fire, (2) stockpiling of necessary supplies and hardening of critical facilities along with intensive planning to accelerate recovery, and (3) substantially greater federal involvement in the program in an effort to improve professional competence and coordination of operations."

Deal, L. J. **WOODS HOLE SUMMER STUDY ON CIVIL DEFENSE: PROJECT HARBOR**. Archives of environmental health, v.10, Jan. 1965: 106-108.

Project Harbor (the National Academy of Science's summer study of civil defense, conducted for the Defense Department at Woods Hole, Mass. in August 1963) represents the "most comprehensive study to date" of civil defense. The 60-odd participants found that the American public is willing to accept and support any civil defense program of active national defense. A program that would greatly enhance populace survivability is technologically feasible, with a system of fallout shelters providing a minimum level of protection. An adequate program would also provide blast and fire shelters, stockpiling of essential articles, hardening of critical facilities, and detailed advance planning for recovery. It was found that public awareness of the actual effects of a nuclear attack was low, resulting in often-unfounded criticisms of the concept of civil defense. Since a completely unpredicted attack is considered unlikely, blast shelters in urban areas and fallout shelters in rural sections would protect the lives of 80 percent of the civilian population of the United States against a 3,000-megaton attack. Fire would not present an important additional problem, since it would pose a serious hazard primarily in areas that had received heavy blast damage. The study recommended that risk to the various parts of the nation be equalized; that civil defense and active military defense be integrated; that the Federal Government participate more extensively; that there be a single unified command structure for warning, resource management, and development of a recovery program; and that civil defense preparations be of lasting value (for instance, shelters could be built with an ancillary peacetime purpose). It was also felt that an effective program would require extensive educational measures, both for a professional cadre and, to some extent, for the general public. The Harbor Project could not, in the time allowed it, develop a comprehensive blueprint for American civil defense; never-

theless it represented a rational and objective look at a problem all-too-often viewed emotionally. (Extracted from: Arms Control & Disarmament, v.1, no.2.)

10. *Volunteer Services and Occupational Skills*

a. Miscellaneous Aspects

OCCUPATIONAL SKILLS AND CIVIL DEFENSE, by Stephen L. Brown. Menlo Park, Calif., Stanford Research Institute, 1966. Various paging. (SRI Project No. MU-4949-350.)

Prepared for Office of Civil Defense, Department of the Army, under Contract No. OCD-PS-64-201, OCD Work Unit No.3331B.—“Detailed knowledge of local distributions of industrial skills and nationwide patterns of employment is useful pre-attack in analyzing industrial vulnerability and postattack in allocating labor resources. A method for estimating occupation-industry distribution, by census tract, is proposed and used in a hypothetical attack on San Jose, California, to investigate selective survival of occupational skills. A matrix of occupations, by industry, is presented for the entire United States. The types of analyses that can be undertaken using the matrix are discussed.” With references.

SOCIAL ACTION IN CIVIL DEFENSE: THE STRATEGY OF PUBLIC INVOLVEMENT IN A COUNTY CIVIL DEFENSE EDUCATIONAL PROGRAM, by George M. Beal and others. Ames, Iowa, Iowa State University of Science and Technology, 1964. 74 p.

Contract No. OCD-OS-62-150; Research Subtask 4811-D. A summary of the final report. “The purpose of the report was to focus on one aspect of social action and civil defense: the initiation of large-group social action among individuals and organizations. Specific objectives of the reports were as follows: 1. To present a construct (theoretical framework) of the social action process which can be used as (1) a design for implementing social action programs and/or (2) as a framework for analyzing existing or past social action programs. 2. To present an analysis of social action program involving civil defense . . . 3. To discuss the finding of the study and to explore the implications of these findings in the attempts of the Office of Civil Defense to instigate other social action programs.” Summary of findings; also—a final note.

SOCIAL ACTION IN CIVIL DEFENSE: THE STRATEGY OF PUBLIC INVOLVEMENT IN A COUNTY CIVIL DEFENSE EDUCA-

TIONAL PROGRAM, by George M. Beal and others. Ames, Iowa, Iowa State University of Science and Technology, Iowa Agricultural and Home Economics Experiment Station, 1964. 379 p. (Rural Sociology Report no.34, Project No. 1529.)

Prepared in cooperation with Office of Civil Defense, Office of the Secretary of the Army, Contract No. OCD-OS-62-150, Research Subtask 4811-D.—“It is the purpose of this report to focus on one aspect of social action and civil defense: the initiation and execution of large-group social action among individuals and organizations. Specific objectives of this report are as follows: 1. To present a construct (theoretical framework) of the social action process which can be used as (1) a design for implementing social action programs and/or (2) as a framework for analyzing existing or past social action programs . . . 2. To present an analysis of a social action program involving civil defense . . . 3. To discuss the findings of this study and to explore the implications of these findings in the attempts of the Office of Civil Defense to instigate other social action programs.” With list of references.

THE USE OF VOLUNTEERS AND VOLUNTARY ORGANIZATIONS IN CIVILIAN DEFENSE AND PREPAREDNESS. Ithaca, N.Y., Cornell University, Department of Sociology, 1964. Various paging.

Prepared for Office of Civil defense, Department of Defense, Contract No. OCD-OS-62-72.—This study presents “findings from an exploratory investigation of the use of volunteers and voluntary organizations in civil defense programs at the local community level . . . [The study focused] on community leadership attitudes on the assumption, well documented in the relevant literature, that programs which span the total community are effective to the degree that they succeed in enlisting at least the moral support of established local leaders . . . Section I of this report sets the stage for the empirical data by digesting and interpreting the existing literature on voluntarism as a general social phenomenon . . . Section II reports . . . findings from field studies of five communities in two midwestern states . . . In Section III, . . . some comparisons [are presented], based on two mail surveys, between community leaders in the five field-study communities and the local civil defense directors in . . . [the] three-state sample. Section IV deals exclusively with the survey of local directors, comparing paid versus volunteer directors on various criteria of local program effectiveness. And . . . Section V . . . [presents]

a set of concrete recommendations, deriving from both the empirical data and the survey of literature, for alternative modes of civil defense organization. In general . . . [it is the impression] that primary reliance on voluntarism is unlikely, at this time, to promote maximum effectiveness in either the conduct or the interpretation of civil defense at the local community level."

THE VETERINARY PROFESSION IN CIVIL DEFENSE, by R. D. L. Walker, in *Civil Defense Bulletin (Australia)*, v.6, no.2 (April 1964) 33-38.

Reprinted from Canada's Emergency Measures Organization National Digest, August 1963.—"Together with the medical, dental, nursing and other allied professions, the veterinary profession has an important role in maintaining a strong national defense. Probably . . . [its] greatest service is in disease prevention and insuring the provision of a safe food supply in adequate quantities, so as to maintain the health, welfare and morale of the human population at the time of, and immediately following, a national emergency . . . From experience in disaster emergencies, . . . the veterinarian can be expected to devote his professional talents and technical training to assist the Civil Defense authorities in every capacity."

VITAL ROLE OF GENERAL AVIATION IN A NUCLEAR ATTACK, by J. S. Butz, Jr., in *Flying*, v.70, no.1 (January 1962) 34-35 plus.

"What can the personal/business pilot do to help the nation in the event of a nuclear attack? Government studies show unconditionally that general aviation can play a 'vital role' in helping the nation survive such a disaster. Individually and collectively, pilots can use their skills and their aircraft to be a source of great strength in maintaining a functioning society, especially in the first day after a massive assault. Civil defense authorities on both national and state levels are looking to the 75,000 general aviation airplanes to work beside airline and military aircraft in transporting vital cargos such as medical personnel and supplies, evacuating casualties, maintaining communications into damaged areas, and providing positive reconnaissance information on blast damage and the spread of radioactive fallout. To assist private pilots and general aviation operators in understanding their possible contributions to civil defense, the Federal Aviation Agency has prepared a broad set of instructions. These instructions are part of the national aviation disaster plan covering the emergency management of civil

airports and aviation operating facilities."

b. Training and Education

DISASTER NURSING PREPARATION, by Mary V. Neal. New York, N.Y., National League for Nursing, 1962. 254 p.

Contract No. CD-SR-58-38. Report of a pilot project conducted in four schools of nursing and one hospital nursing service. The study was in effect from 27 January 1958, to 6 September 1961 and was "designed to investigate and demonstrate the ways by which students of nursing and personnel in hospital nursing services can be prepared to cope with . . . disaster nursing problems [1. organize under chaotic conditions; 2. manage large wards with little or no professional assistance; 3. utilize volunteer help, both trained and untrained; 4. adapt and develop nursing care procedures to meet the demands of a disaster situation; 5. adapt and develop public health nursing functions to meet the demands of the situation] and those additional activities that impinge on medical practice." Conclusions and recommendations. Bibliography relating to disaster nursing.

FINAL REPORT ON THE DEVELOPMENT OF OVERALL TRAINING PROGRAMS. Santa Monica, Calif., System Development Corporation, 1965. 268 p. (TM-(1)2600/000/01.)

Contract OCD-PS-64-58.—"A comprehensive examination of civil defense training is made. After definition of civil defense objectives, a training program analysis is made which establishes specific training requirements and describes various training program elements. From a perspective including these inputs, the current civil defense training program is analyzed. Three alternative training programs geared to different funding levels and a 'Preparation for Crisis' program are proposed and examined. Evaluation plans for these alternative programs are presented with discussion of cost effectiveness. A theory of instruction for use in civil defense training is presented. Finally, suggestions for further research are made." With: appendixes, figures, and bibliography.

REQUIREMENTS AND METHODS FOR IMPROVING LOCAL CIVIL DEFENSE TRAINING, by Paul Willis and others. Pittsburgh, Pa., American Institute for Research, 1963. Various paging. (AIR-C-92-6/63-TR.)

"The general purpose of the study was twofold. The first objective was to identify critical training requirements for an effective local civil defense system. A second and related objective was the develop-

ment of recommendations as to methods by which these training requirements might be effectively met. These objectives reflect the fact that in all levels of civil defense operations there is a basic and continuing need for well-developed training programs." Brief of the study. Outline of recommended local training program. Appended: Tentative Job Hierarchies for Services; Job Activities; Source Materials for Training Courses.

11. Social Services

* **EMERGENCY SOCIAL SERVICES.** Washington, Department of Civil Defense, 1965. 25 p. (Emergency Welfare Services Manual FG-E-13.2.)

"This manual . . . is one of a series of guidance documents prepared by the Bureau of Family Services and the Children's Bureau of the Welfare Administration, U.S. Department of Health, Education, and Welfare, for the Office of Civil Defense . . . The purpose of the documents is to assist State and local public welfare (DPW) and civil defense (CD) officials in planning, organizing, and—if need arises—operating their Emergency Welfare Services (EWS) programs in the event of threatened or actual nuclear attack." Contents: The Need; Staffing and Responsibilities; Early Postattack Operations; Emergency Financial Assistance; Care and Protection of Children; Care of the Aged and Handicapped; Welfare Institutions; Recovery Needs.

LAW AND ORDER IN CIVIL DEFENSE; SOME ASPECTS OF CIVIL AND MILITARY PROGRAMS FOR THE MAINTENANCE OF LAW AND ORDER IN A CIVIL DEFENSE EMERGENCY, by Frank Cohn. East Lansing, Michigan State University, School of Police Administration and Public Safety, 1963. 448 p. (Unpublished M.S. Thesis.)

"The purpose of this thesis . . . is to examine preparations at the national, state, and local levels of government, both by civilian and military authorities, to ascertain if realistic preparations have been made to insure a degree of success towards preserving law and order in case of a civil defense emergency. The target complex of Detroit, Michigan, was selected as a specific critical locality where the existence or lack of civil defense planning for law and order could be examined concretely. To achieve the objective of the study, the national plan of the Office of Civil and Defense Mobilization . . . and implementing plans at subordinate levels were examined. Foreign civil defense programs, situations during World War II, and domestic disaster situa-

tions were examined to ascertain likely law enforcement requirements. The legal implications of civilian versus military control were considered." With: appendixes, tables, and bibliography.

LIBRARIES AND CIVIL DEFENSE, by Jane Fiquet Hanna, in *ALA Bulletin*, v.60, no.6 (June 1966) 655-656.

"The desire of the public for more knowledge and understanding of civil defense is reflected in the many requests for literature on all aspects of the current program. This means that the civil defense story needs to be told, and that for this purpose, adequate literature should be available in all libraries. To help in meeting this need, national professional organizations, such as the American Library Association, have vital roles to play in initiating and coordinating the dissemination and use of civil defense educational materials by member agencies and branch libraries at the community level . . . Another effective means of disseminating information and securing community involvement is through library conducted adult discussion groups on civil defense subjects . . . Libraries are a natural source of shelter against fallout. In many cases, not only do they provide a mass of material which provides physical shielding because of the type of construction of the buildings, but added protection comes from the mass of books in the stacks." With: selected publications of the Office of Civil Defense.

E. FALLOUT AND THE PUBLIC: THE SHELTER PROGRAM (SEE ALSO APPENDIX B)

1. Miscellaneous

ADDRESS BY JOSEPH ROMM, ACTING DIRECTOR OF CIVIL DEFENSE, OFFICE OF THE SECRETARY OF THE ARMY, TO THE GOVERNOR'S CIVIL DEFENSE CONFERENCE FOR BUSINESS AND INDUSTRY, SEATTLE, WASHINGTON, MAY 14, 1967. Washington, Office of the Secretary of the Army, Office of Civil Defense, 1967. 13 p.

The Acting Director of Civil Defense discusses briefly some significant changes that have taken place in our Nation with respect to industry and defense, and then in some detail delves into the development of a nationwide fallout shelter system, in which both business and industry are deeply involved in this aspect of national defense.

U. S. Office of Civil Defense. BASIS FOR THE DEPARTMENT OF DEFENSE FALLOUT SHELTER PROGRAM. [Washington, U.S. Govt. Print. Off.] 1965 21 p. illus.

Illustrates graphically the justification for a national fallout shelter system by charting the effects of various sizes of nuclear blasts, the contour of fallout patterns, the areas and populations affected by a hypothetical attack, and the lifesaving potential of a strategic defense system that consists of improved shelters and an antiballistic missile system. (Extracted from: Arms Control & Disarmament, v.2, no.2.)

COMMITTEES FOR COMMUNITY SHELTER PLANNING, by David S. Brown. Washington, Department of Defense, Office of Civil Defense, 1966. 38 p. (H-11-B.)

The Organization and use of the Community Shelter Planning Policy Council and Technical Advisory Committee. (Importance of local committees; their establishment; selection of members; their role in the community etc.)

DON'T LET THE CRIES OF DOOMSDAY PANIC YOU, by Richard F. Demplwolffin, in *Popular Mechanics*, v.117, no.4 (April 1962) 113-115 plus.

"Despite some muddy emotionalism over the value of shelters, research studies show that life unquestionably would go on after the bomb." The author provides facts and figures to substantiate his thesis.

A GUIDE FOR THE TRAINING OF FOOD MANAGERS OF LICENSED FALLOUT SHELTERS, by Jack C. Levy and others. Ithaca, N.Y., Cornell University, The School of Hotel Administration, 1963. 61 p.

Contract No. OCD-OS-62-49. "This publication has been prepared to deal with that phase of the administration of the large public or semi-public shelters which has to do with the management of the water and food problems. It is designed to serve as a guide for those responsible for planning, organizing and maintaining the facilities and the voluntary forces that will be needed for the shelters and the post-shelter functions. It describes the purposes, activities and responsibilities of the food manager and suggests policies, organizational patterns, and administrative practices that will be helpful to him in attaining his difficult goals."

SUBURBAN COMMUNITY FALLOUT SHELTER STUDY: SUMMARY OF INTERIM RESEARCH REPORT. Chicago, IIT Research Institute, Technology Center, 1964. Various paging. (IITRI Report No. P-6009.)

Prepared for Office of Civil Defense, Department of the Army under Contract No. OCD-PS-64-50, Subtask 1631-B.—"The objectives of this study are to identify those problems involved in planning and creating an integrated suburban community fallout shelter system and to develop methodologies leading to their solution. The study encompasses two major phases apart from the literature search and orientation. Phase I is concerned with the identification of quantitative factors such as population density and shelter locations, which are necessary to the planning of a community fallout shelter system, the identification of a representative community, and an attempt to measure these pertinent factors in the selected community. Problems in measurement are outlined, and suitable methodology to solve them are developed. The second phase of the study concerns the relationship of the factors measured in the existing community shelter system obtained in Phase I to a logical range of fallout conditions. This second phase resulted in the determination of the adequacy and needs of the community system." With bibliography.

2. Sociological Aspects

ARE SHELTERS THE ANSWER? by Margaret Mead, in *The New York Times Magazine*, (26 November 1961) 29 plus.

"An anthropologist examines the 'current' anxiety over how to provide protection in an age of nuclear bombs."

HISTORICAL INCIDENTS OF EXTREME OVERCROWDING, by Albert D. Biderman and others. Washington, Bureau of Social Science Research, 1963. 41 p. (BSSR:354-5.) (Final Report. Contract No. OCD-OS-62-122.)

"A review was made of readily accessible documents on a variety of historical incidents which involved groups of people living in varying degrees of intensely crowded circumstances. The primary orientation of the reviews was to gain knowledge of possible hazards to life and health under conditions of overcrowding that might occur in civil defense shelters..." Among the documents investigated were those dealing with: African slave trade; crowding aboard emigrant ships; relocation of Japanese-Americans; system of convict transportation; Civil War prisoners. Conclusions and suggestions for research. References.

QUEST FOR SURVIVAL, by Gen. F. P. Henderson, in *Ordnance*, (September-October 1962) 159-162.

"Civilized" man formerly depended upon a wall or fortress to guard his cities from enemy attack, but today we are ignoring shelters and other passive defense means and are trusting in glamour weapons . . . In our approach to the complex problems of national survival we have been too preoccupied with weapons and too enamored of our current scientific precocity. We are inclined to ignore the accumulated wisdom of centuries as no longer being applicable in the present day—a not infrequent error in man's long history. We have given far too little consideration to the historical and sociological reasons for or against a comprehensive population shelter and survival program."

SOCIAL SCIENCE AND CIVIL DEFENSE: PROBLEMS IN THE STUDY OF AN UNPRECEDENTED FUTURE, by Arthur I. Waskow, in *Conflict Resolution*, v.9, no.3 (1965) 397-412.

"Discussions of 'The Shelter-Centered Society' (Waskow, 1962, hereafter referred to as SCS) as a particular case in recent dialogues concerning civil defense could be, and should be, carried on at three different levels. First of all, there is the methodological question of the means used to arrive at SCS, as one example of attempts by scholars to cope with the difficulties involved in the study of an unprecedented future. Secondly, there is the question of whether the hypotheses concerning the social impact of civil defense that are presented in SCS itself have a reasonable relation to our knowledge of social reality, or are merely based on a private ideology that is blinkered from accurate perceptions of reality. Finally, there is the problem in the sociology of knowledge and the history of the ideas that is presented by the nature of the reception of SCS by those in and out of government who attempt to shape official policy, as one example of how shapers of policy deal with a scholarly document that warns of possible undesirable consequences of official policy." All three issues are examined here. With references.

SOCIAL SCIENCE AS SYSTEMATIC ANXIETY: A CASE STUDY IN THE CIVIL DEFENSE DIALOGUE, by Arthur I. Waskow, in *Conflict Resolution*, v.9, no.2 (1965) 264-287.

"This essay is a case study of one contribution from one sector of the social science community to the dialogue on shelters. This contribution raises compelling questions about the nature and conditions of the dialogue. Here, however, the emphasis . . . [is] on examining the content of this particular contribution and the ways in which its elements are related to each other within a larger structure. The

particular elements and the large structure form an identifiable way of making assertions about events in the uncertain future, shaped by a special view of contemporary society. With this special view, questions about the desirability of shelters tend to receive predetermined answers. In the case in point, predetermination tended strongly to be against the desirability of building shelters. For present purposes, however, a discussion of the particular policy judgment is relatively unimportant. More important is an examination of the ways in which the form and content of a scientific contribution can structure attitudes toward particular policies, beyond merely explicating and delineating more clearly the nature of the policy alternatives themselves." The material for this case study comes from an analysis of "The Shelter-Centered Society," by Arthur I. Waskow. With references.

3. *Public Attitudes and Opinions (See Also Section II-A)*

ADOPTION OF PUBLIC FALLOUT SHELTERS: A 1966 NATIONAL STUDY, by Gerald E. Klomgla and others. Ames, Iowa, Iowa State University, Iowa Agricultural and Home Economics Experiment Station, Department of Sociology and Anthropology, 1966. 38 p. (Rural Sociology Report No.54.)

Prepared in cooperation with Office of Civil Defense, Office of the Secretary of the Army, Contract No. OCD-PS-65-9, Research Subtask 4811-D.—"A model of the adoption process is used to evaluate the public's progress in adopting the idea of using public fallout shelters in the case of nuclear attack. The analysis is based on findings from the 1966 OCD National Survey of 1497 respondents. Respondents are assigned to one of five adoption stages: Unaware stage, Aware stage, Information stage, Evaluation stage and Adoption stage. The findings: in the early part of 1966 21% of the respondents were unaware of the existence of public fallout shelters (Unaware stage); 20% were aware of public fallout shelters but had no additional information about them (Aware stage); 24% were aware of and had additional information about public fallout shelters but had not thought about using them (Information stage); 19% were aware of, had additional information, and had thought about using public fallout shelters but had not decided to go to a public fallout shelter (Evaluation stage); and 16% were aware of, had additional information, had thought about using, and had decided to go to a public fallout shelter in the event of nuclear attack.

The findings from the 1966 OCD National Study were compared with findings from the 1964 OCD National Study."

AMERICAN PUBLIC OPINION AND THE FALLOUT-SHELTER ISSUE, by Gene N. Levine and John Modell, in *Public Opinion Quarterly*, v.29, no.2 (Summer 1965) 270-279.

"What impact has the fallout-shelter issue had upon American public opinion? Who have built shelters for themselves and why did they do this? How are opinions regarding shelters affected by beliefs about war, by social class, by community social structure? These are some of the questions answered by this 1963 study of nine Northeastern communities . . . The results of this study reveal that to a surprising degree the public accepted the idea of fallout shelters by early 1963—even though they were relatively unconcerned about the issue and proportionately few had taken private action. Those who, by building their own shelters, had made a substantial response to the issue, were seen to be a rather special group. The citizenry at large had invested little in the issue, and was waiting for the government . . . to equip them with places of refuge. One correlate of favorability to fallout shelters— anxiety about war—was in part a reaction to the world situation as perceived by the individual citizen. But the social-class 'style' aspects of the shelter issue seem to have been substantively unrelated to fallout shelters. The public's opinions on the fallout-shelter issue are likely to remain somewhat divorced from their private actions until (if ever) the issue attains greater salience. For the while they await clear-cut government action on the fallout-shelter issue—and the turn of world events."

THE CASE FOR FALLOUT SHELTERS, by Nicholas Ross, in *The Reporter*, v.25 (21 December 1961) 16-20.

The author in the introduction tells the reader that at this point "you may be opposed to the shelters, or you may still be undecided. No one, however, should take a stand on the subject without hearing the facts about radiation." He discusses radiation, probabilities and possibilities, concluding that there is a case for fallout shelters.

* CBS REPORTS "IN CASE OF WAR" AS BROADCAST OVER THE CBS TELEVISION NETWORK, THURSDAY, NOVEMBER 9, 1961, 10:00-11: PM, EST. New York, Columbia Broadcasting System, 1961. 30 p.

This is the transcript of a program in which Howard K. Smith was reporter and Fred W. Friendly

was the executive producer. Mr. Smith at the outset of the Report asks: "In case of war, would you know what to do? In case of nuclear war, would America know what to do?" Various views on fallout, fallout shelters, fallout shelter programs, Soviet Civil Defense experience, etc., are provided in this Report. This CBS Reports was the first of two such Reports on the balance of terror in the Atomic Age. A second program on the subject of arms control and disarmament was presented subsequently as part of this series.

CIVIL DEFENSE IS VITAL, in *Ordnance*, v.46, no.248 (September-October 1961) 210-211.

"Although some efforts have been made in past years to interest the American people in the need for fallout shelters and evacuation plans, little practical work was done in this field. However, with the approach of the Berlin crisis, President Kennedy called for increased emphasis on a civil-defense program and delegated the principal authority for its implementation to the Department of Defense." In this paper, the editors of *Ordnance* review the background and highlights of the situation, concluding that "Past indifference to this important phase of our national security is finally being dissipated and, with the Department of Defense in charge, workable plans now will be made for shelters and evacuation."

COMMUNITY ACCEPTANCE OF A SHELTER DEVELOPMENT PROGRAM: A REPORT ON INTERVIEWS WITH SCHOOL SUPERINTENDENTS, SCHOOL BOARD MEMBERS, HOSPITAL DIRECTORS, AND ARCHITECTS. (Cambridge, Mass., The Simulmatic Corporation, 1964. 112 p.

Final Report prepared for Office of Civil Defense, U.S. Department of the Army under OCD Contract No. OCD-PS-64-17, Research Subtask 4813A.—Contents: List of Tables; List of Figures; The Study; The Problem; A Shelter Development Program is Needed; The Principles of the Shelter Development Program Are Generally Accepted; Obstacles to the Shelter Development Program; Incentives to Community Cooperation with a Shelter Development Program; Who the Influentials Are; A Final Look At Estimates of Response; Recommendations. Appendixes, Tables, and Figures.

THE DEVELOPMENT OF VALUES AND BELIEFS IN YOUNG AMERICANS TOWARD FALLOUT SHELTERS AND CIVIL DEFENSE (PILOT STUDY REPORT NO.1), by Bradley S. Greenberg and others. Lansing, Michigan State University, 1966. 70 p.

Contract No. OCD-PS-64-71. "This report represents . . . initial study of a special Civil Defense audience—American youngsters. This is an audience whose entire life has been spent in the atomic era. But, in contrast with their elders, they know of atomic devastation only through history books and movies. They do not personally know of World War II, nor of means by which Japan was brought to surrender. Korea also occurred before most of them were born." More than 300 students were asked to write essays . . . The youngest were deliberately chosen for their heterogeneous compositions. They included approximately equal size groups of boys and girls, 8th and 12th graders, accelerated and below-average students, from different social class backgrounds, and from different racial and ethnic groups.

EVALUATION OF COMMUNITY RESPONSE TO FPHS PROGRAM; FINAL REPORT. Cambridge, Mass., The Simulmatics Corporation, 1966. 52 p.

Prepared for Office of Civil Defense, Department of the Army, Modification #6 to OCD-PS-64-17.—"Two surveys were conducted to evaluate the response in Rhode Island to a questionnaire on Evaluation of Fallout Protection in Homes. (FPHS) Receipt of the FPHS questionnaire did not significantly change attitudes toward civil defense programs, nor did it raise the level of anxiety in the community. Receipt of replies to the householder's responses (which preceded the second survey) did raise the level of awareness about civil defense, without significantly changing the level of anxiety or changing the activity of the householders with regard to a fallout shelter program. The FPHS questionnaire program, while useful in eliciting information, cannot be itself serve to encourage action (to any useful degree), by the public with regard to fallout shelters."

THE FALLOUT-SHELTER OWNERS: A STUDY OF ATTITUDE FORMATION, by F. K. Berrien and others, in *Public Opinion Quarterly*, v.27, no.2 (Summer 1963) 206-216.

"From the inception of the debate over fallout shelters it was apparent that the issue would not be resolved on the merits of the facts alone. The content and pattern of the contenders' supporting arguments bespoke a diverse perception of ourselves, the enemy, and the situation. Here is . . . [a] study that sought to pinpoint these differences, and then use the information to learn about the formation of the

attitudes upon which decisions on these momentous issues are based."

THE GREAT FALL-OUT SHELTER PANIC, by Fletcher Knebel, in *Look*, v.25, no.25 (5 December 1961) 21-25.

The author reviews the debate which swept across the United States: "Should every American prepare to claw his own hole in the ground in a lone effort to escape the lethal radiation of a possible nuclear war?" The author states that whatever the merits of an official stand on the subject, "Americans in all walks of life plunged into a controversy over the matter. A premonition of doomsday . . . [overcame] citizens in various parts of the country."

MASS MEDIA AND THE FALLOUT CONTROVERSY, by Sidney Kraus and others, in *Public Opinion Quarterly*, v.27, no.2 (Summer 1963) 191-205.

"The reactions of populations to danger vary all the way from mass hysteria to general apathy, and provoke perplexing problems for attitude research. Here is a study of individual variations in reaction to the threat of radioactive fallout."

A NATION OF MOLES, by Brig. Gen. Robert Lee Scott, Jr., in *National Defense Transportation Journal*, v.18, no.1 (January-February 1962) 25 plus.

"A retired Air Force General speaks his mind on what he terms 'the year of the fallout shelter.' By digging their way underground, he says, the American people have fallen prey to a form of nuclear blackmail." The author "sees freedom held only by readiness to wage push-button warfare to death, if need be."

SHELTERS: I. WHEN THE HOLOCAUST COMES, by Roger Hogan; THE RELUCTANT MOLES, by John Kay Adams, in *The Nation*, v.193, no.15 (4 November 1961) 341-349.

In these articles, "two distinct aspects of the bomb-shelter program are discussed. Mr. Hogan . . . deals primarily with the program's political connotations and its practical efficacy in case of a nuclear attack . . . In a second article, John Kay Adams . . . deals primarily with the ethical and moral problems posed by the program and the public's slow response to it."

4. Shelters: Availability

ALTERNATIVE APPROACHES TO FINANCING A NATION-WIDE SHELTER PROGRAM; A CONTRIBUTING INVESTIGATION TO THE "AREA-WIDE SHELTER SYSTEMS

STUDY," by Ernest C. Harvey. Menlo Park, Calif., Stanford Research Institute, 1966. 93 p. (SRI Project MU-4536.)

Prepared for Office of Civil Defense, Department of the Army, OCD-OS-63-149, OCD Work Unit 1613A.—"This report presents the results of a preliminary examination of alternative approaches to the problem of financing a nationwide shelter system. Current practices applicable to capital investments by individuals and other segments of the private sector are discussed, some of the problems with respect to their utilization for shelter construction are listed, and incentive programs which could encourage action in this area are analyzed. In addition, local sources of funds and state and federal aid programs are discussed as a basis for evaluating the extent to which each of these levels of government could participate. With respect to federal and state programs, particular attention is given to the possibility of combining civil defense considerations with existing program objectives and to the identification of techniques that might be applicable to a separate national program designed to develop shelter capability. In general, all approaches other than one involving 100 percent federal funding appear to offer limited potential. However, several aspects of the financing problem warrant additional research prior to a national-level decision regarding financing."

BUSINESS CAN SAVE 70,000,000 LIVES, by Kenneth W. Yarnold and Robert C. Suggs, in *Harvard Business Review*, v.39, no.6 (November-December 1961) 6-8 plus.

"Industrial fallout shelters are important not only for their value in discouraging any would-be aggressor, but also for survival in case our nation is attacked. According to informed sources, a sound shelter program carried out by industry and local government could save up to 70,000,000 lives in case of a heavy thermonuclear attack (depending, of course, on the areas bombed, weather conditions, etc.). Business leaders will find . . . [in this article] the data they need to: (1) understand the nature of the fallout threat; (2) direct construction of a sound, economical shelter; (3) plan for the management problems of running an occupied shelter."

A DAMAGE-LIMITING SHELTER-ALLOCATION STRATEGY, by Grace J. Kelleher. Arlington, Va., Institute for Defense Analyses, Economic and Political Studies Division, 1965. 67 p. (IDA Study S-186.)

Prepared for Office of Civil Defense, Department of the Army, Contract OCD-OS-63-134, Subtask 4113-C.—"A damage-limiting strategy for allocating blast and fallout shelter protection is proposed. The features which combine to make this strategy unique are its relatively fine-grained local orientation and its ability to meet a survival percentage criterion irrespective of the actual ground zero within the area considered. Shelter postures are tailored to the needs of the individual cities or local areas, examined in one-square-kilometer detail. All potential ground zeros are evaluated in the shelter allocation process and least-cost decision rules are applied. Alternative postures, in which shelter choices and survival levels were varied under this strategy, are described and costed." With figures and tables.

AN EVALUATION OF THE SHELTER POTENTIAL IN MINES, CAVES AND TUNNELS, by Robert A. Krupka. Harmon-on-Hudson, N.Y., Hudson Institute, 1965. 59 p. (HI-507-RR.)

Contract No. OCD-PS-64-116; Subtask No. 4211-B. "Some of the current interest in the active-passive defense field involves the design of high-performance damage-limiting systems. This study examines the availability and the potential of using mine space (and to a much lesser extent, cave and tunnel space) in future civil defense programs. The study gives some background information concerning the previous research on the use of mines for shelter and suggests that the available survey information was inadequate to allow reasonable estimates to be made of potential. New estimates of usable and yearly space increases are given, based on a sample survey of a few mines. The paper also discusses the possibilities and costs of developing new mine space and adapting mines to shelter use." References. With map of limestone quarries and mines by OCD region.

THE NATIONAL FALLOUT SHELTER SURVEY, by Col. A. D. Chaffin, Jr. and Capt. W. M. McLellan, in *The Military Engineer*, v.54, no.361 (September-October 1962) 335-336.

"One of the major uncertainties in the civil defense program has been the availability of suitable shelters in existing buildings throughout the United States. Future plans and programs can be formed only after adequate information has been obtained on this point. The National Fallout Shelter Survey and Marking Program is, therefore, a first step, and is one part of the civil defense effort. The program comprises the inventory of potential public shelters

throughout the United States, Puerto Rico, Virgin Islands, Canal Zone, Guam, and American Samoa. Following the inventory, the work includes engineering evaluation of spaces for feasible modifications, obtaining licenses to use the spaces, and marking them for public use." Organization; Preparation and Contracting; and Phase 2 and Future Plans.

PROVIDING FOR FALLOUT PROTECTION IN FEDERAL STRUCTURES AND NON-PROFIT INSTITUTIONS. REPORT TO AC-COMPANY H.R.8200. Washington, Government Printing Office, 1963. 66 p. (88th Congress, 1st Session, House of Representatives, Report No.715.)

The purpose of the legislation was to authorize and require the incorporation of public shelter in appropriate civil or military structures of the U.S., to authorize payments to nonprofit institutions or instrumentalities for shelter purposes, and to otherwise amend the Federal Civil Defense Act of 1950. This report, in part, deals with: natural disasters and civil defense; military role; test ban considerations; the postattack world and survival; sectional analysis of the bill; foreign civil defense, (including Soviet civil defense); shelter development and life-saving return; the civil defense program to date; civil defense program in the Department of Defense; etc.

5. *Shelters: Design and Mass Production*

THE ARCHITECT'S ROLE IN CIVIL DEFENCE, by C. R. Thompson, in *Civil Defence Bulletin (Australia)*, v.7 no.3 (July 1965) 6-8.

"The architect's role in nuclear defence is to assist in reducing national and individual vulnerability to death and destruction. In terms of buildings the most important factor [brought out in] this thesis seeks to bring to light the realization that effective vulnerability reduction can be achieved. Architects must cease to be sceptical and realize that not only is vulnerability reduction possible but that they have an important role in a vulnerability reduction programme. The architect's role is to: 1. Act as an instigator and leader of vulnerability reduction programmes; 2. Provide physical protection; 3. Plan for rapid post-war reconstruction."

ENGINEERING—ESSENTIAL ELEMENT OF CIVIL DEFENSE, by William P. Durkee, in *The Military Engineer*, v.56, no.374 (November-December 1964) 427-428.

"Three years ago the Federal Government developed and launched a new civil defense program, as a necessary complement to the military defense

system and an integrated part of the total national defense effort. The principal features... are: a nationwide system of dual-use public fallout shelters, created by designating suitable interior areas of buildings as emergency shelters without interfering with their normal day-to-day function; the essential, complementary civil defense facilities and activities; and full use of available military forces and resources for civil defense support in peacetime and after an attack... Engineers... have an important part in the design, construction, and maintenance of supporting facilities required in a balanced civil defense system... Engineers of the Army Corps of Engineers and the Navy Bureau of Yards and Docks have distinct and essential roles in the civil defense effort. They are conducting the National Fallout Shelter Survey for OCD. In addition, they are providing technical assistance to other parts of the program." Present Progress; Development Programs; and Future Outlook.

INCORPORATION OF SHELTER INTO APARTMENTS AND OFFICE BUILDINGS; INTERIM EDITION. Washington, Department of Defense, Office of Civil Defense, 1962. Various paging. (PG-80-4).

"The basic purpose of this guide is to indicate ways that shelter against nuclear attack can be incorporated economically in apartment and office buildings without detriment to their normal use. To this end... [the pamphlet discusses] the problems that must be considered in the preliminary planning of the building and shelter, and information for the guidance of the architect/engineer in preparing working drawings and specifications. In addition, it... [discusses] generally some special problems which arise with regard to climate and locality, and which are treated in detail in other publications of the Office of Civil Defense. An introduction to Weapons Effects is included in Appendix A."

INCORPORATION OF SHELTER INTO SCHOOLS; INTERIM EDITION. Washington, Department of Defense, Office of Civil Defense, 1962. Various paging. (PG-80-1.)

"The basic purpose of this guide is to indicate the ways that shelter against nuclear attack also can be incorporated economically in school construction without detriment to the education program. To this end... [the pamphlet discusses] the problems that must be considered in the preliminary planning of the school shelter and information for the guidance of the architect/engineer in preparing work-

ing drawings and specifications. In addition, it... [discusses] generally some special problems which arise with regard to climate, locality or specific weapons effects, and which are treated in detail in other publications of the Office of Civil Defense." With appendices.

***AN INVESTIGATION OF SCHOOL DESIGNS TO RESIST INTEGRATED NUCLEAR WEAPONS EFFECTS**, by Robert N. Bruce, Jr., and others. New Orleans, La., Tulane University, Department of Civil Engineering, 1965. 199 p. (Technical Report No.100.)

Contract No. OCD-PS-64-215. "The objective of this investigation was to perform a comprehensive study of the capabilities of the award-winning entries of the National School Fallout Shelter Design Competition, TR 19, to provide protection against effects of nuclear weapons other than those associated with fallout... The general scope of the investigation included: 1. An examination and evaluation of the winning designs to ascertain their bonus protection and inherent value to withstand thermal radiation, overpressure, and dynamic pressure. 2. A tabulation of the advantages and disadvantages of each existing design, as applicable. 3. Recommendations for appropriate design modifications. 4. A tabulation of estimated costs for recommended modifications."

THE POTENTIAL OF MASS PRODUCTION FOR REDUCING COSTS IN SHELTER CONSTRUCTION—A PRELIMINARY SURVEY, by Charles D. Bigelow. Menlo Park, Calif., Stanford Research Institute, 1965. 53 p. (SRI Project MU-4949-021.)

Prepared for Office of Civil Defense, Department of the Army, Contract OCD-PS-64-201, Work Unit 1156A.—"This report presents the result of a survey, the object of which was a preliminary determination of the potential of mass production for lowering shelter costs. All cost items necessary for a comparison of mass production with conventional techniques in building are identified. Selected items, whose cost may be reduced through the use of mass-production techniques, are reviewed and savings estimated, and the direction of future research is outlined." With bibliography.

*** SUGGESTED BUILDING CODE PROVISIONS FOR FALLOUT SHELTERS**. Washington, Department of Defense, Office of Civil Defense, 1966. 44 p. (TR-36).

Prepared by Graves-Hill & Associates, Architects, Lexington, Kentucky, the scope of the contract

included: 1. Development of a permissive building code article based on OCD minimum technical requirements; 2. Development of administrative code provisions to permit relaxation of normal requirements during times of national emergency while retaining all code requirements for normal use; 3. A detailed study of the four national model codes to determine areas inhibiting inclusion of fallout shelter in buildings as dual-use space with specific recommendations for changes; 4. A detailed study of the four national model codes to determine where fallout shelter should be mentioned and to recommend material for insertion; 5. A survey to determine what has been done in other countries in the way of adopting ordinances to require the inclusion of fallout shelter in buildings; and 6. Submission of recommendations as to whether provisions for mandatory fallout shelter in new buildings should be initiated in this country, and, if recommended, how best to accomplish this. Bibliography.

SUGGESTED LONG-RANGE POLICY TOWARD NEW CONSTRUCTION FOR THE NATIONAL SHELTER PROGRAM, by Richard I. Condit. Menlo Park, Calif., Stanford Research Institute, November 1967. Various paging. (SRI Project No. IM-4075.)

Merrill, B. S. **SWORD WITHOUT SHIELD**. Military engineer, v.58, Sept./Oct. 1966:354-355.

The "shields" of today are the fallout shelters that protect against the radiation from today's "swords"—nuclear weapons. But there is no effective program or plan to develop this nuclear shield in the United States. Evacuation, emergency shelters, and dispersal facilities are not adequate. Although the requirements for fallout shelters are simple, most military engineers prefer to ignore the problem. Millions of "free" shelter spaces have been found in existing buildings and "added millions could be provided at almost no cost if architects and engineers thought ahead about fallout." Dual-purpose fallout shelters, with a peacetime as well as an emergency function, cost little extra and assure a profitable use of space. A steady program to include such protection in new buildings will assure that "the sword will have its shield." (Extracted from: Arms Control & Disarmament, v.3, no.1.)

C. PREATTACK PLANNING FOR SURVIVAL AND POSTATTACK RECOVERY

1. Miscellaneous Aspects

AN APPROACH TO DEFINING POSTATTACK RECOVERY MANAGEMENT CON-

CEPTS AND TECHNIQUES, by Donald E. Clark, Jr., and others. Menlo Park, Calif., Stanford Research Institute, 1966. 50 p. (Contract No. OSD-OS-63-149; OCD Work Unit No.3550.)

"... The application of postattack countermeasures generally requires the active use of manpower, equipment, supplies, and resources; proper organization and management is required for their most effective use. Relatively little preparatory work has been done on the systematic development of coordinated postattack recovery operations, and essentially nothing has been done to develop management systems for these operations. This report represents an effort to outline the compositions of an integrated postattack countermeasure system and functional requirements for managing the system. Postattack recovery activities in this report are defined as those civil defense activities that take place from the time that exit from shelter can occur (i.e., when the protective characteristics of shelter are no longer a factor in the continued survival of the occupants) or must occur (i.e., when survival supplies are depleted). These activities, such as decontamination, radiation exposure control, debris clearance, and damage repair, are countermeasures against nuclear weapon effects that must be implemented to ensure national survival and recovery..." Summary and recommendations. References.

CIVIL DEFENSE SHELTER POLICY AND POSTATTACK RECOVERY PLANNING. TWENTY-FIRST REPORT BY THE COMMITTEE ON GOVERNMENT OPERATIONS. Washington, Government Printing Office, 1960. 48 p. (86th Congress, 2d Session, House Report No.2069, Union Calendar No.916.)

Contents: Introduction, Shelter Policy, Post-attack Recovery Planning, and Missile Bases and Civil Defense.

LIVE: THREE PLANS FOR SURVIVAL IN A NUCLEAR ATTACK. Menlo Park, Calif., Stanford Research Institute, 1960. 69 p.

Prepared for SRI members and their families by Management Sciences Department of the Stanford Research Institute the text and illustrations in this booklet describe how to survive a nuclear attack at SRI and the facilities available there for survival.

PLANNING FOR CIVIL DEFENSE: FIVE REQUIREMENTS, by Harold A. Knapp, Jr., in *Bulletin of the Atomic Scientists*, v.19, no.4 (April 1963) 39-41 plus.

"To make effective plans for survival in the event of nuclear war, it is necessary to pay attention first to those preparations which are crucial. It is also necessary to understand and be candid about the conditions under which survival is possible and feasible." With this as background the author discusses: Planning Assumptions; Technical Information (as another essential requirement in comprehensive planning); Survival Instructions; Emergency Regulations; Highest Attack Level; etc.

REQUIREMENTS FOR LOCAL PLANNING TO COVER HAZARDS OF FALLOUT. VOLUME I—FINAL REPORT; VOLUME II—APPENDICES TO FINAL REPORT. Darien, Conn., Dunlap and Associates, Inc., 1965. 2 v.

This report was prepared for Office of Civil Defense, Department of the Army, Contract No. OSD-OS-63-161, Subtask 4531A. "The work under this contract has been concerned with the testing of Civil Defense plans. The testing of plans may be regarded as falling into three categories. The first category is: 'Is such a plan as this desirable? Does it deal with a good way of saving lives and property?' The second category is: 'Is this plan clear, consistent, logical? Is it appropriate to the environment in which it will have to be carried out? Does it consider the availability of people, facilities, and organizations which will be necessary for its success?' The third category is a practical test; 'Does the plan as written work?' In this study work has been confined to the first of these categories: the determination of what activities Civil Defense authorities ought to plan in order to maximize the saving of lives and property."

STUDY OF FACTORS INFLUENCING REMEDIAL MOVEMENT, by Myron B. Hawkins. Burlingame, Calif., United Research Services, 1964. 21 p. (URS 638-2.)

Contract No. OSD-PS-64-20. "The feasibility of remedial movement, i.e., transfer of people from inadequate fallout shelters to areas providing greater protection, was investigated. The study took into account fallout arrival time, reference radiation intensity, shelter or refuge protective factor, and travel time. Primary payoff conditions were defined in terms of reduction of radiation casualties." Among the conclusions: that for one-hour arrival (i.e., when fallout arrives at about one hour after detonation), the maximum allowable travel time for maximum payoff is about 1.3 hours.

A STUDY OF THE ADVANTAGES AND DISADVANTAGES OF A STRATEGIC EVACUATION OF DEPENDENT ELEMENTS OF THE POPULATION. McLean, Va., Human Sciences Research, Inc., 1963. Various paging. (HSR-RR-63/21-Ec.)

Prepared for the Office of Civil Defense, Department of Defense on Contract OCD-OS-62-168.—“The purpose of this study was to determine some of the outcomes of implementing a nationwide protection policy based in part on the strategic evacuation of certain dependent groups from high priority target areas in the United States. The outcomes of particular interest are those relating to the feasibility of performing the evacuation and those which are likely to influence the nation's post-evacuation posture. The analysis focused mainly on social and psychological factors. A review of evacuee behavior during previous relocations was made: a survey of dependent evacuees' behavior and attitudes during and following the Guantanamo Bay evacuation was conducted. The concept of dependency was explored and some of the implications of involving dependents in an evacuation were derived; an illustrative study was performed in which the effects of a hypothetical evacuation of dependents from specified target areas in the country were explored. General conclusions regarding the several outcomes are delineated.” With references.

SURVIVAL IN NUCLEAR WAR, by Kendall D. Moll, in *Ordnance*, v.46, no.248 (September-October 1961) 207-209.

“Many people immediately write off their chances for survival in an atomic attack. Others feel that survival is not worth while if it is to be the ‘stark’ . . . life predicted by some Congressional witnesses. However, realistic and reasonable evidence does not support such a discouraging outlook . . . But our efforts to assure survival and recovery will require personal initiative, study, work, and money . . . Civil defense must be based on rational belief . . . [This belief] must include the value of civil defense. And to make a convincing case for civil defense, a series of questions should be answered: (1) How many and what kinds of weapons might be used? (2) What are the probable targets? (3) What are the hazardous areas of blast, radioactive fallout, and fire? (4) What can we personally expect to gain by preparing against these hazards? It is hopeless to attempt to give definitive answers to these questions, but a reasonable basis for action at least can be provided by a conscientious assess-

ment of nuclear realities . . . While an enemy attack on this country could threaten the safety of every civilian, a few simple preparations for shelter or evacuation would greatly decrease the number of casualties.”

YOU CAN SURVIVE THE BOMB, by Col. Mel Lawrence and John Clark Kimball. Chicago, Ill., Quadrangle Books, 1961. 194 p.

In the introduction to this book, Roger S. Can-nell, Director, Emergency Planning Research Center, Stanford Research Institute, Menlo Park, California states: “It is simple logic. The Soviets have nuclear weapons and the means of delivering them. They can destroy us. We know how to shield against these weapons. If we do, our nation will survive. If we don't, it probably won't. The government, in the last few months, has come to recognize this. It is moving quickly to provide fallout shelters for every one. But at best it will be several years before such a large program can be completed. In the meantime, there is much you can do for yourself. First, you can learn the facts about nuclear war. Much of what you ought to know is simply presented in this book. Then you can help your government move forward by supporting its program. Do this by making your informed views known to your friends and neighbors. All of you then can work with your congressmen and state representatives. These bodies must vote funds or there will be no program. Next take steps to protect your family until the federal program is completed. This book will help you to do this. It tells you how to estimate the threat where you live, how to build a shelter, and how to stock it . . .”

2. Federal and State Governments

IF BOMBS FALL—WHO'LL RUN THINGS, in *U.S. News & World Report*, v.51, no.16 (16 October 1961) 45-49.

“Burrowed deep into the earth are vital Government facilities to keep U.S. operating after a nuclear attack. Direct hits on Washington will not wipe out the Federal machinery. They will not wipe out the military power to counterattack, either. Dispersed, underground headquarters are only a small part of the intricate planning. A line of succession is set to put men in charge of the White House, Defense, Congress, key departments, even State governments. A system for survival emerges from elaborate but little-known details, now disclosed.”

Gellman, Benet D. **PLANNING FOR A NATIONAL NUCLEAR EMERGENCY: THE ORGANIZATION OF GOVERNMENT AND FED-**

ERAL-STATE RELATIONS. Virginia law review, v.52, Apr. 1966: 435-462.

The fearsome prospect of a nuclear war has prompted the United States to undertake comprehensive programs for the national defense. Nuclear planning has focused almost entirely, however, on the military aspects of national preparedness. The author cautions the federal and state governments also to plan adequately for the preservation of government, and of our federal system, in the wake of an attack. He urges that the primary responsibility for our defense resides in the federal government, and that new studies should be undertaken to identify the respective roles and the interrelationship of the federal and state governments in such a situation. The author concludes that postattack governmental plans can and should be devised which are consistent with the United States Constitution and with the federal system. (Extracted from: *Arms Control & Disarmament*, v.2, no.4.)

3. Stockpiling

CD STOCKS 34 MILLION SHELTERS; COMMAND AND CONTROL APPARATUS GETS EMPHASIS, by Michael Hornberger, in *The Journal of the Armed Forces*, v.102, no.51 (21 August 1965) 14-15.

"How much help can the Armed Forces give the civilian population in the event of a massive nuclear strike against the U.S.? Chances are, the Services, although cooperating extensively and increasingly with civilians in civil defense, will find it hard enough to fend for themselves after the damaging attacks that are now possible from enemy land and sea-based missiles. Whatever happens, one thing is certain: measures to assure the continuity of military operations and the survival of Service Personnel take precedence over military support of Civil Defense. Moreover, after a large nuclear attack, military communications could be so ruptured and personnel losses so high that the problem of civilian survival would be left entirely in the hands of the civilians themselves. It is with these realities in mind that U.S. Civil Defense efforts... are moving forward... Whatever fatality and cost figures DOD studies may reveal, Service cooperation in CD has increased over the past few years... Whatever the results of CD progress in the past four years may be, the fact remains that at present, there is no active defense against ballistic missile attack. What defense there is, is passive and provided by shelters, warning systems and the like." The author outlines, also CD command and control apparatus and organization.

* THE MEDICAL STOCKPILE PROGRAM AND ANALYSIS OF SELECTED EMERGENCY MEDICAL CARE PREPAREDNESS AREAS. Washington, Department of Health, Education, and Welfare, Public Health Service, Division of Health Mobilization, 1964. 52 p.

This paper attempts to supply answers to the following eight questions: (1) What are the elements of a total emergency medical program in relation to present estimates of post-nuclear situations, such as those applied in the Risk II Study? (2) Does the Present Program fully reflect the effect of weapons developments, the shelter program, and other civil defense programs on previous plans and estimates? (3) What is the relationship of civil defense emergency hospitals to community hospitals, first aid stations, medical supplies in shelters and the medical self-help program? (4) How is medical service to be provided to blast and thermal casualties? (5) How should hospitals and other emergency medical facilities located in order to meet medical needs? What are the positive national criteria for determining and selecting such locations? (6) Are the present civil defense emergency hospitals designed, equipped, and supplied to meet specific functions as part of a total system? (7) How can an operable emergency medical system be developed nationally, with assignment and orientation of community medical and related personnel? What is the relationship of the public health inactive reserve to such a system? (8) What information program is required to develop community awareness of the program, particularly among private medical groups?

STOCKPILING STRATEGIC MATERIALS: POLITICS AND NATIONAL DEFENSE, by Glenn H. Snyder. San Francisco, Chandler Publishing Company, 1966. 314 p.

Chapter I: The Stockpiling Act of 1946; Chapter II: Organization and Administration; Chapter III: Stockpile Acquisition, 1946-1959; Chapter IV: The Establishment of Stockpile Objectives; Chapter V: Stockpiling in Partial Mobilization, 1950-1953; Chapter VI: The Eisenhower Stockpile Program; Chapter VII: Recent History and Current Problems (The Symington Hearings, Executive Stockpile Committee; Disposal of Surpluses; Stockpiling for Conventional War; Stockpiling for Nuclear War); Chapter VIII: Summary and Conclusions (National Security vs. Subnational Interests: Stockpiling and Strategy). Appended: table showing stockpiles of strategic and critical materials, October 1964; also Public Law 520-79th Congress-Strategic and

Critical Materials Stock Piling Act (approved 23 July 1946). The book includes brief comments on stockpiling by Office of Civil Defense.

STOCKPILING TO SURVIVE A NUCLEAR ATTACK, by Albert W. Bellamy, in *Science*, v.138, no.3541 (30 November 1962) 958-960.

"... In broad terms, an adequate civilian defense system has two phases. The first phase demands special structures, including stocked fallout shelters throughout the country and a maximum number of blast-resistant structures in and near population centers, with adequate instruments for detecting and measuring air pollutants and maintaining communications. The second, or recovery, phase requires stockpiling of fuels for operating farm machinery; power sources (fossil or nuclear) for rebuilding the nation's industrial plant; and, above all, stockpiling of food to keep human beings alive and functioning... The second phase of a total defense system must bridge the gap until production facilities are restored."

4. *Economic Aspects*

DIMENSIONS OF SURVIVAL: POSTATTACK SURVIVAL DISPARITIES AND NATIONAL VIABILITY, by Norman Hanunian. Santa Monica, Calif., The Rand Corp., 1966. 214 p. (Memorandum RM-5140-TAB.)

"This study was designed to explore the *compositional* changes that massive nuclear attack might produce in America's societal structure. However, estimates of overall survival magnitudes—in terms of the usual gross indicators—have been included among the study's output... The study proceeds from consideration of essentially demographic entities to economic ones, examining the full range of economic activities by reference to a disaggregation of the labor force and to certain other indicators." With 23 figures.

THE ECONOMY CAN SURVIVE NUCLEAR ATTACK, by Gilbert Burck, in *Fortune*, v.64, no.5 (November 1961) 112-115 plus.

"It is... [a] fact that the U.S. has no civil-defense program that can be accurately described as such. Moreover, practically no official programming is being done for 'the postattack,' when the ability to reorganize and recuperate will be crucial to our national survival. Today there is new interest in family fallout shelters; corporate executives are making plans to safeguard records, machinery—and employees; and the Department of Defense is busy with a \$93-million survey of existing shelter

space in public buildings. But almost no one in authority is doing things on the scale that is necessary. Civil-defense officials have long assumed that home shelters will provide the bulk of protection, but it now seems plain that a comprehensive system must be built around the group shelter. Children must be protected at school and workers at work; both must have refuge on the way home as well as at home. Congressman Chet F. Olfield, one of the few who have long championed such a program, thinks group shelters could be built in as little as a year at a cost of \$20 billion..."

IF BOMBS FALL: WHAT HAPPENS TO YOUR SAVINGS, PROPERTY, INVESTMENTS? in *U.S. News & World Report*, v.51, no.20 (13 November 1961) 81-84 plus.

In the event of an H-bomb strike against the U.S.—"Would millions find their assets—stocks, cash, titles to homes—valueless? How would reconstruction costs be met? You find some surprising answers in 'postattack' plans taking shape in Washington. For example: staggering new taxes to raise hundreds of billions for replacing damaged property. Here is the inside story."

5. *Industry and Business*

CIVIL DEFENSE AND EMERGENCY PLANNING FOR THE PETROLEUM AND GAS INDUSTRIES. Washington, Department of Defense, Office of Civil Defense, 1964. Various paging.

Prepared by the National Petroleum Council of Washington, D.C. in response to a request from the Department of Interior and reprinted by the Office of Civil Defense. Contents: Volume I—Principles and Procedures; and Volume II—Guide and Sample Company Plans. The first volume "is intended to review in detail the many problems to be considered in planning for emergencies—either natural or man-made—and to suggest solutions. Sabotage and espionage, as well as civil unrest, may occur at any time and especially during an emergency. Hence, security measures to control access to plants and otherwise to safeguard against these threats are included." The Guide and Sample Company Plans in Volume II are based on the principles and procedures contained in Volume I.

* **CIVIL DEFENSE AND MUNICIPAL UTILITIES; PROPER PROTECTION, SUPPLIES, AND ADVANCED PLANNING ARE VITAL FACTORS IN THE EVENT OF ATTACK**, by William J. Lacy, in *The Municipal South*, (March 1962) n.p.

"In the event of a nuclear war against our cities, industrial centers and military installations, some of the bombs and missiles will not land on their intended targets. This means a nuclear weapon could fall anywhere. However complicated the subject of nuclear weapons effect or phenomenology is, or how technical the protection and countermeasures become, everyone should know some of the technical aspects . . . [This article presents] a discussion of Civil Defense material of primary interest to the municipal utilities people." Partial contents: Primary Products; By-Product Atoms; Utilities and Personnel; Postattack Recovery; Structural Damage; etc.

DEVELOPMENT OF RAPID SHUTDOWN TECHNIQUES FOR CRITICAL INDUSTRIES, by Fred R. McFadden and Charles D. Bigelow. Menlo Park, Calif., Stanford Research Institute, 1966. 100 p. (Contract No. OCD-PS-64-201 (32).)

Prepared for Office of Civil Defense Department of the Army. Work Unit 2321A. "This study is designed to provide information regarding rapid shutdown in industry that would be useful in developing plans for overall reduction of industry vulnerability to nuclear attack . . . [It] presents a detailed analysis of rapid shutdown in the petroleum refining and petrochemical industry and in the steel industry . . ." Appended: A cost effectiveness rationale for improved shutdown procedures.

DISASTER PLANNING; MANAGEMENT'S NEWEST CHALLENGE, by John P. Kushnerick, in *Aerospace Management*, v.5, no.1 (January 1962) 24-28.

"Springback from a nuclear war will depend on the post-attack condition of our technical manpower . . . If we lose our plants, and keep our men, we are still in business. But, if we lose our men and save our plants, we are finished . . . How can industry protect its technical manpower? What will be expected of industry after a nuclear attack? What plans should companies make to protect important documents and insure the continuity of management?" The author discusses these as well as allied problems, showing that it is comparatively easy to obtain answers.

GUIDE TO CIVIL DEFENSE MANAGEMENT IN THE FOOD INDUSTRY. Washington, Department of Agriculture, Agricultural Marketing Service, 1963. 32 p. (Agriculture Handbook No. 2541.)

"This guide is designed to encourage and assist the food plant operator in carrying out those survival preparations which are essential to his own welfare,

his community's and the Nations." Part I: Orientation to Civil Defense Planning in the Food Industry; Part II: Civil Defense Preparations in the Food Industry; Part III: Industry-Government Cooperation for Community Survival; Part IV: Operations During Survival Period. Appended: Industry defense checklist; references.

* **INDUSTRIAL RECOVERY TECHNIQUES**, by Stephen L. Brown. Menlo Park, Calif., Stanford Research Institute, 1966. 76 p. (SRI Project No. MU-4949-350.) Final Report.

Contract No. OCD-PS-64-201. "This report presents some generalized concepts concerning industrial models, industrial vulnerability to nuclear weapons effects, industrial recovery requirements, and industrial recovery procedures. Mathematical expressions relating manufacturing outputs of materials, of facilities, and of people are presented and used to develop measures of damage and guidelines for allocating recovery resources. More qualitative descriptions of industrial operational organization, damage assessment methods, methods for determining recovery requirements, and specific recovery procedures are also formulated. Recommendations are submitted concerning (1) operational countermeasures for industry and for civil defense organizations and (2) desirable further research efforts in industrial civil defense." References. Illustrations. Tables.

* **MAJOR DISASTERS: POLICIES AND PLANS**. New York, N.Y., Financial Executives Institute, 1962. 122 p.

"This report has two main purposes: first, it serves to give the reader an up-to-date appraisal of industrial programs; and second, it attempts to provide the minimal guide line required by business and industry to develop a practical organization survival plan . . . The result of the Panel's inquiry [Panel on Policies and Plans for Major Disasters] clearly demonstrate that we are wrestling with a vast, complicated problem. It demands the combined planning efforts of business and industry, the local, state and federal governments, and the civilian populations. If this problem of minimizing the effects of major disasters is to be dealt with properly, then the financial executive must utilize his intimate and critical knowledge of every facet of the business. He must do this by expending his time, effort, and talents to encourage the development of disaster control plans with his company." Disaster control planning: current appraisal; guide to planning a program; government's role in disaster planning; case studies in disaster control. Bibliography.

MILITARY TECHNOLOGY AND THE SURVIVAL OF CITIES, by Clark C. Abt. Bedford, Mass., Ratheon Company, 1963. 70 p. (Project Unicorn BR-2247.)

"The effects of modern strategic weapons on urban-industrial areas are considered from the aspects of weapon technology, military strategy, and arms control considerations. The possibilities for active and passive defenses against likely threats are evaluated, and the major alternatives for unilateral means of reduction of war casualties and damage are considered. Quantitative cost-benefit estimates are developed for these alternatives, which include hardening, dispersal, active defense, and mixes of these. A degree of urban dispersals satisfying peacetime feasibility and offering peacetime utilities, together with fallout shelters, is found to provide a solution superior in cost-effectiveness to blast shelters and/or active defenses, although the latter are not necessarily ruled out for strategic reasons. Some economic and social constraints on urban dispersal are considered, together with means for making it feasible."

NUCLEAR ATTACK AND INDUSTRIAL SURVIVAL, in *Aviation Week and Space Technology*, v.76, no.1 (1 January 1962) S1-S16.

"This report concentrates on the problems of U.S. industrial survival for two important reasons. First, the excellent organization that industry already has can be a powerful force for the protection of people. Second, in the aftermath of any war, it is vital to society that production be restored as quickly as possible. Therefore, in planning for both survival and recovery, business and industry have special responsibilities . . . to employees, to the community, and to the nation . . . This report tells business and industrial management what it needs to know about: the effects of nuclear attack—fire, blast, fallout; plans to make in advance for surviving an attack; preparations that can be made for post-attack recovery."

* [PLANNING AND PREPARING FOR INDUSTRIAL DEFENSE AND SURVIVAL], in *Industrial Security*, v.6, no. 3 (July 1962) 7-159.

This issue is entirely devoted to a series of articles pertaining to emergency planning measures related to industrial and civil defense. Articles have been published in other issues of *Industrial Security* which describe disaster control and emergency planning programs in industry. The July 1960 issue of *Industrial Security* was devoted exclusively to disaster control and emergency planning. This issue is a

reference text on emergency planning which contains up-dated articles from the July 1960 issue, together with some new material. Here in this one issue, are the opinions and experiences of leading experts and specialists in the field of industrial nomilitary defense planning. The many articles tell why and how industry should plan, as well as what many companies are now doing in preparing for industrial defense and survival.

PROTECTING INDUSTRIAL RESOURCES AGAINST NUCLEAR ATTACK; INTERIM REPORT OF AN ECONOMIC ANALYSIS, by Henry M. Peskin. Arlington, Va., Institute for Defense Analyses, Economic and Political Studies Division, 1965. 63 p. (IDA HQ 65-3550, Study S-187.)

Prepared for Office of Civil Defense under Contract OCD-OS-63-134, Subtask 4113-C.—"A method is described for allocating an assumed budget for the protection of industrial resources from nuclear attack. The objective of the allocation is to help ensure that the surviving population has the resources it needs for its support. The method relies on an allocation model designed to facilitate post-attack economic recovery defined in terms of various post-attack national economic goals. Results are shown for a pilot run of the model."

SURVIVAL AND RECOVERY: INDUSTRIAL PREPAREDNESS IN THE NUCLEAR AGE. New York, N.Y., American Management Association, 1962. 36 p. (AMA Management Bulletin No.15.)

Based upon material presented at the Special Industrial Preparedness Conference held in New York City January 31-February 2, 1962. Contents: Operation How-To, by Don G. Mitchell; A Positive Attitude Toward Survival, by John I. Snyder, Jr.; Assuring the Continuity of Money and Credit, by James L. Robertson; Maintaining Vital Communications, by R. R. Hough; Restoring Production after Attack, by William H. Baumer; A Company Preparedness Program (I. The Over-all Organization, by H. W. Fisher; II. Protecting Headquarters Operations, by Kenneth E. Yandell; III. Protection for Subordinate Units, by Paul E. Kuhl); Emergency Planning by Non-Manufacturing Companies, by Gerhard D. Bleicken; The Economic Impact of a Nuclear Attack, by Marshall K. Wood.

6. *Population and Manpower Resources*

THE POSTATTACK POPULATION OF THE UNITED STATES, by Ira S. Lowry. San . . . Monica,

Calif., Rand Corporation, 1966. 139 p. (RM-5115-TAB.)

"This Memorandum is one part of a study of the biological and environmental consequences of nuclear war. The RAND Corporation is conducting the study for the U.S. Atomic Energy Commission, Division of Biology and Medicine, Technical Analysis Branch (TAB). The Memorandum presents quantitative estimates of damage to the U.S. population inflicted by a variety of simulated nuclear attacks on this country. It differs from most such studies in giving particular attention to the possibility of survival disparities among demographic components (age/sex/color) of the population at risk. It explores the implications of such disparities for both immediate postattack recovery planning and for long-term patterns of demographic change. The study should be of interest to persons concerned with postattack recovery planning and to sociologists and demographers concerned with the impact of disaster on human societies." Section II: Five Simulated Attacks; Section III: Exposure to Weapons Effects; Section IV: Vulnerability to Weapon Effects; Section V: Postattack Population Changes; Section VI: Illustrative Population Projections; Section VII: Postattack Population Policies. Appended: mortality and survival tables. With diagrammatic illustrations.

A STUDY OF PERSONNEL DEMANDS AND AVAILABILITIES FOR POSTATTACK COUNTERMEASURE SYSTEMS, by William W. Pendleton. McLean, Va., Human Sciences Research, Inc., 1966. 166 p. (HSR-RR-66/11-Mh.)

Prepared for Office of Civil Defense under Contract No. OCD-PS-65-52, Subtask No. 3543A.— "This report presents some of the issues related to the use and assignment of manpower to postattack countermeasures system. Assuming that countermeasure systems must be able to utilize all potentially available manpower and that different systems must avoid competing with each other, the report uses the concept of organization to examine the quality and size of potential pools of manpower and suggests that the same concept is paramount in considering means of assigning manpower to countermeasure systems. On the basis of an examination of fourteen general organizational groupings, it is concluded, first, that the capacity of the population to generate potential manpower for emergencies is enormous and, second, that the ability to organize manpower for emergency operations, though in some respects great, is not distributed through the society in the

same way as is the potential manpower. From an examination of thirteen areas of need that would characterize the postattack society, the report suggests several principles for assigning manpower. The report concludes with a description of the kinds of research that are suggested by the investigation." With bibliography.

7. Food, Water, and Health

EMERGENCY HEALTH PROBLEMS STUDY, by W. T. Herzog. Durham, N.C., Research Triangle Institute, Operations Research Office, 1963. 41 p.

Contract No. OCD-OS-62-250. "The peacetime health status of the population (based on the U.S. Public Health Service National Health Survey) and the range of complications due to shelter living were evaluated. Rough estimates suggest that medical care and public health measures could add a number of survivors equal 1-2 percent of the total preattack population during a single two-week period under ideal conditions. Postattack medical care of casualties would not seriously compete with measures directed toward health maintenance of the general population, except for consumable medical supplies. Because casualty care and health maintenance of non-casualties are capable of adding comparable numbers of survivors during the shelter period (a maximum of 2 percent of the preattack population for either type of emphasis), it is concluded that both approaches should be emphasized."

ENVIRONMENTAL HEALTH PLANNING FOR POSTATTACK CONDITIONS: SOME PROBLEMS, PROGRAMS, AND PRIORITIES, by Raphael J. Salmon. Durham, N.C., Research Triangle Institute, Operations Research and Economics Division, 1966. 75 p. (Final Report R-OU-196.)

"Conditions imposed by massive nuclear attack can be expected to disrupt normal environmental health services of communities throughout the United States, and to threaten the health of surviving population. This study develops a framework to help decision-makers evaluate postattack conditions relative to environmental health. Review and analysis of existing information on probable postattack conditions as they might affect, and be affected by, personnel of local health departments, public health organizations, and resource management practices is presented. Anticipated postattack environmental health problems are identified, and priority judgments are made on a comparative basis in terms of

level of gravity. Rationale supporting the judgments is included, and both action and research programs to improve preparedness are recommended . . ." Bibliography.

ESTIMATED NUMBER OF DAYS' SUPPLY OF FOOD AND BEVERAGES IN RETAIL STORES, 1962—A CIVIL DEFENSE STUDY, by Michael G. VanDress. Washington, Department of Agriculture, Marketing Economics Division, 1962. 80 p. (Marketing Research Report No.577.)

"This report estimates the number of days' supply of food and nonconcentrated beverages in retail food stores in continental United States. Data presented in Marketing Research Report No.286, 'Number of Days' Supply of Food and Beverages in Retail Food Stores,' November 1958, have been updated to reflect changes in population, and revised to meet lower daily caloric and fluid ounce requirements than specified in the original report. Also, total supply data have been reclassified on a more comprehensive regional basis."

NUTRITION IN THE POSTATTACK ENVIRONMENT, by R. S. Pogrund. Santa Monica, Calif., 1966. 64 p. (Memorandum RM-5052-TAB.)

This research is supported by the San Francisco Operations Office of the U.S. Atomic Energy Commission under Contract AT(04-3)-414, Project Agreement No.3.—"In the event of a nuclear attack on the United States, the damage to agriculture, the biological environment and the economy might make it difficult to provide the surviving population with an adequate diet during the recovery period. This study summarizes the nutritional levels required to maintain number of procedures which might be used to meet these requirements for various assumed levels of damage." With references.

• **THE POSTATTACK WATER-CONTAMINATION PROBLEM**, by William J. Lary and Marlow J. Stangler, in *Health Physics*, v.8 (1962) 423-427.

"Because of an increasing interest in civil defense, together with an increased knowledge of the potential hazards due to fallout from nuclear weapons, more attention has been focussed on obtaining information on postattack problems. The problems of concern are (1) the estimation of the probable level of contamination to be expected in the public water supply; and, to a lesser extent, (2) the role of contaminated water as a source of internal radiation hazard at early times. Unless the water supply is entirely from ground water sources, the water may

become contaminated and be a potential radiological health hazard. This paper discusses contaminating conditions, fallout levels, internal-dose criteria, the early radioiodine ingestion problem, and the effectiveness of various water decontamination processes. Dose calculations indicate that the problem of a fallout-contaminated water supply will not be severe in most cases. Radioiodine concentration by the thyroid and the resultant exposure is more serious the first 100 days after attack than the dose to the bone. However, the radiation exposures are such that they and the water supply hazard cannot be ignored. The effectiveness of various water decontamination process is discussed."

THE RECOVERY AND RESTORATION OF METROPOLITAN WATER WORKS FOLLOWING NUCLEAR WAR ATTACK. Arcadia, Calif., Engineering-Science, Inc., 1963. 147 p.

Prepared for the Office of Civil Defense, Department of Defense, under the provisions of Contract No. OCD-OS-62-106.—This report is: "An assessment of the status of preparedness of metropolitan water works with respect to civil defense and a study of methods and procedures to recover damaged systems in early post attack period." With references, appendices, tables, figures, and forms.

REVIEW OF POSTATTACK FARM PROBLEMS, by Kendall Moll and others. Menlo Park, Calif., Stanford Research Institute, 1961. 67 p. (SRI Project No. INU-3084. Prepared for Office of Emergency Planning.)

"Postattack food supplies could come from two sources: stored stocks and current farm production. Earlier studies have indicated that surplus grain and other food stocks in the United States could sustain the population for several years if processing and distributing problems could be solved. However, rapid resumption of farm production would be desirable to provide a better diet, promote the self-sufficiency of local area, and aid in restoring the efficient operation of our national economy. The penalties of inadequate consideration of farm problems were illustrated by the disastrous failure of government officials to plan for enough food production in Germany during World War I. The present analysis examines the . . . questions of how agricultural production depends on various resources, how vulnerable these resources are to nuclear attack, how over-all agricultural production might be affected by attack, and how certain mobilization steps might alleviate postattack farm problems." Diagrammatic illustrations.

SURVEY OF THE INFECTIOUS DISEASE PROBLEM AS IT RELATES TO THE POST-ATTACK ENVIRONMENT, by H. H. Mitchell. Santa Monica, Calif., The Rand Corp., 1966. 84 p. (Memorandum RM-5090-TAB.)

This research was sponsored by the San Francisco Operations Office of the U.S. Atomic Energy Commission under Contract AT(04-3)-414, Project Agreement No.3.—“This report is an attempt to summarize, more or less discursively, the author's exploratory thinking about the problem of infectious disease in the event of nuclear attack upon the United States . . . This document supports the contention that infectious diseases are likely to be especially important problems in the postattack environment. There are aspects of uniqueness in this area, both qualitatively and quantitatively, which are not obvious if we think only in terms of our own recent experiences . . . The past history of infectious disease and war presents much of interest to us. The several 'themes' which run through this record are relevant to our concepts of postattack dislocations.” With references.

Crozier, Dan. **SURVIVAL IN GERM WARFARE**. Ordnance, v.49, Mar./Apr. 1965:530-532.

Since the deliberate introduction of pathogenic organisms into the United States is possible in a major war, it is essential for all medical personnel to be aware of this potential weapon system and to plan means of dealing with the mass casualties its use would produce. The primary objective of such an attack on large population centers being the disruption of industry, communications, and transportation, it would not be necessary for a high percentage of the inhabitants to become ill for an attack to be successful. In this instance defense becomes basically a medical problem. Of primary importance is immediate recognition of early cases and identification of the etiologic agent. Faster and more efficient methods of reporting and diagnosing infectious diseases must be devised to this end. Protection against many diseases that might be utilized in an attack can be rendered through immunization; complete protection of the population is impossible, however, with most vaccines. Stores should be produced, nevertheless, even for those diseases that have little importance in the United States under normal conditions. In the event that no vaccine exists for a given disease, research should be undertaken to develop one. Prompt antibiotic prophylaxis of the known-exposed population would also be of value in minimizing casualties. Although some deaths will necessarily result under any

circumstances, civilian defense against bacteriological warfare is feasible. (Extracted from: *Arms Control & Disarmament*, v.1, no.3.)

8. *Sociological Aspects*

COMMUNITY POWER STRUCTURE AND CIVIL DEFENSE, by Joe M. Bohlen and others. Ames, Iowa, Iowa State University of Science and Technology, Iowa Agricultural and Home Economics Experiment Station, 1964. 254 p. (Rural Sociology Report No.35, Project No.1529.)

Prepared in cooperation with Office of Civil Defense, Office of the Secretary of the Army, Contract No. OCD-OS-62-150.—“Specifically, this report is concerned with the distribution of social power in local communities and its possible effects upon the implementation of a civil defense program. An additional objective is to determine the knowledge and sentiments of community influentials toward the civil defense program . . . The general objectives of this report are to: 1. Define concepts which are relevant to understanding the community decision-making process. 2. Present an analytical model or framework which a local civil defense director could use in analyzing social power. 3. Operationalize the framework in one community. 4. Determine the civil defense knowledge, sentiments, sources of information, and actions of community influentials in the community under study.”

SOCIAL PHENOMENA IN A POST-NUCLEAR ATTACK SITUATION; SYNOPSES OF LIKELY SOCIAL EFFECTS OF THE PHYSICAL DAMAGE, by Peter G. Nordlie and Robert D. Popper. Arlington, Va., Human Sciences Research, Inc., 1961. 91 p. (HSR-RR-61/2-Se; AFOSR Technical Note 60-1495; ASTIA AD No.263-211.)

Prepared under AFOSR Contract No. AF 49(638)-549, Project No.9779, Task No.37735, for Behavioral Sciences Division, Air Force Office of Scientific Research, Air Research and Development Command. —“The function of the present report is that of a working paper the purpose of which is to help formulate assumptions and identify variables which need to be taken into account in making predictions about the recovery of a social system from the effects of a nuclear attack. It was taken as a fundamental assumption that recovery of a society would be a function of both physical and social factors (in the pre- and post-disaster situation). The concern of the present research program is primarily with the social factors inasmuch as most

other work being done in this area is focused on physical factors." With references.

TRAINING REQUIREMENTS FOR POST-ATTACK ADAPTIVE BEHAVIOR: FINAL REPORT. Darien, Conn., Dunlap and Associates, 1965. 103 p.

Contract OCD-PS-65-33. "This study had as its primary objectives: 1. The identification of actions required of and beneficial to individual in the post-attack environment. 2. The development of guidelines concerning information and other curricular materials appropriate for training in postattack adaptive behavior . . . The study concluded that the training of the public for adaptive postattack behavior was feasible. Three possible periods for training were identified: pre-attack, in-shelter, and post-shelter. Two major training areas were identified: 1) training in basic survival techniques, 2) training for societal recovery." With bibliography.

9. *Survival of Cities*

CITY DEFENSES AND THE DYNAMICS OF WARFARE, by Thomas C. Schelling. Arlington, Va., Institute for Defense Analyses, Jason Division, 1963. 17 p. (Research Paper p.78, IDA/HQ 63-2223.)

Contract SD-50. "The steps by which general war might come about in the present era need to be analyzed to determine what factors tend to dampen the process, what factors excite it, what steps on one side involve positive feedback to the other side's reaction, what the indicators would be of the imminence of general war, and what the accompanying tempo of diplomatic negotiation might be. With such analysis at hand, one might study the effect . . . of city-defense systems on the process. Some kinds of city defense may have virtually no effect. . . . Active terminal defenses against re-entry bodies presently appear to be of the static sort. . . . Among systems presently being considered, it is the 'passive' defenses that appear to be much the more 'active' in the layman's sense of the term . . . Sheltering and other passive defense measures will affect the crisis in important ways additional to their significance in the event of actual war. Among the steps that may intensify a military crisis and influence the bargaining, dramatic and massive population movements may be outstanding."

CIVIL DEFENSE IMPLICATIONS OF CURRENT AND FUTURE URBAN CONFIGURATIONS, by H. R. Woltman and E. C. Goodrow.

Los Angeles, Calif., Planning Research Corporation, 1963. 342 p. (PRC R-409.)

Contract No. OCD-OS-62-278. "This report examines the possibilities of vulnerability reduction through long-term changes in urban form and structure, in the light of projected trends in economic and social forces affecting future urban development. Urban decentralization is likely to continue in the future and technological change may permit deliberate acceleration of this trend toward sprawling urban regions. Various conceptual and empirical urban forms are reducible to a few basic types. The vulnerability characteristics of the different forms are mixed, but the galaxy and dispersed sheet forms are generally best suited to civil defense purposes. These are similar to the forms that future urban regions are expected to take. A variant of the dispersed sheet form is considered the most advantageous; it would provide compact urban communities, separated by extensive open spaces devoted to non-urban land uses, within future metropolitan areas. In addition, efforts to increase the 'hardness' of urban structures are desirable. An increased proportion of high-hardness structural types should be encouraged in the building mix. This increase should take the form mainly of high-hardness residential structures dispersed singly or in clusters throughout residential areas. Indirect methods are considered by which progress toward these objectives might be assisted through various on-going Federal and state governmental activities." Bibliography.

MILITARY TECHNOLOGY AND THE SURVIVAL OF CITIES, by Clark C. Abt. Bedford, Mass., Raytheon Space and Informations Systems Division, 1963. 69 p.

Prepared for Arms Control Office of the Assistant Secretary of Defense International Security Affairs. Contract SD-125. (DDC No. AD 414-905.)

"The effects of modern strategic weapons on urban-industrial areas are considered from the aspects of weapon technology, military strategy, and arms control considerations. The possibilities for active and passive defense against likely threats are evaluated, and the major alternatives for unilateral means of reduction of war casualties and damage are considered. Quantitative cost-benefit estimates are developed for these alternatives, which include hardening, dispersal, active defense, and mixes of these. A degree of urban dispersal satisfying peacetime feasibility and offering peacetime utilities, together with fallout shelters, is found to provide a

solution superior in cost-effectiveness to blast shelters and/or active defenses, although the latter are not necessarily ruled out for strategic reasons. Some economic and social constraints on urban dispersal are considered, together with means for making it feasible."

10. *Damage Assessment*

COLLATERAL DAMAGE: FINAL REPORT, by Robert A. Krupka. Harmon-on-Hudson, N.Y., 1964. Various paging. (HI-361-RR/5.)

Contract No. OCD-OS-63-122. "This paper presents the methodology and results of a limited study undertaken to determine collateral population damage from weapons aimed at strategic military bases and to roughly estimate the cost of blast shelters to protect everyone at risk." With tabular data.

EFFECTS OF NUCLEAR ATTACK ON RAIL TRANSPORTATION. Menlo Park, Calif., Stanford Research Institute, 1960. 36 p. (SRI Project No. IU-3084.)

This booklet is a condensation of the final oral briefing for a study entitled, A System Analysis of the Effects of Nuclear Attack on Railroad Transportation in the Continental United States. The study was made for the Office of Civil and Defense Mobilization under Contract No. CDM-SR-59-19 and Contract No. CDM-SR-60-37. "The objectives of the study were: 1. To compile an inventory of the transportation resources and to determine the geographical location of the resources. 2. To assess the damage that would be inflicted on the resources by a range of possible nuclear attacks. 3. To estimate the transportation service that could be provided by the surviving resources and compare it with the post-attack requirement for transportation service. 4. To point out possible problem areas in the operation of the railroad transportation system following a nuclear attack on the United States."

NATO CONFERENCE ON DAMAGE ASSESSMENT; SUMMARY REPORT ON U.S. PRESENTATIONS, MAY 5-6, 1964. Paris, NATO Headquarters, 1964. 127 p.

"Included in this document are transcripts or summaries of papers and briefings presented on May 5th and 6th, 1964 to the NATO Conference on Damage Assessment by U.S. participants. Also included . . . is a short glossary of technical terms used by the participants." Partial contents: Concepts and Application of Damage Assessment (Introduction, Damage Assessment Systems, Defense Policy Formulation, Continuity of Government, Civil Defense,

Vulnerability Advice, etc.); Automated Systems for Damage Assessment; Non-Automated Techniques for Damage Assessment; etc.

11. *The Role of the Military in Civil Defense*

ANNUAL REPORT FISCAL YEAR 1966 CHIEF, NATIONAL GUARD BUREAU. Washington, Department of the Army and the Air Force, 30 June 1966. 72 p.

Includes a section (p.17) titled **MILITARY SUPPORT OF CIVIL DEFENSE** in which information is given on the regulations that govern National Guard Support of Civil Defense, the extent of support, and the steps that are being taken to implement the support. ". . . During the period of 4 April 1966 to 4 June 1966, a team representing the Office, Deputy Chief of Staff for Military Operations, United States Continental Army Command, Office of Civil Defense, United States Navy, United States Air Force, and the National Guard Bureau was organized to monitor the effectiveness of the military support program. The team visited each Continental United States Army Headquarters, a representative number of State Adjutants General, their State Headquarters, and State Civil Defense Officials. The visits confirmed the feasibility of the concept and found that significant progress is being made in preparations to meet the responsibilities for military support of civil defense . . ."

THE ARMY AND CIVIL DEFENSE, by Robert Lamson, in *Military Review*, v.44, no. 12 (December 1964) 3-12.

"On 31 March 1964 the Secretary of Defense . . . transferred the Office of Civil Defense to the Secretary of the Army. This continued a trend toward greater military interest in civil defense and toward strategies and forces which can limit damage in the event of nuclear war—on missiles used for counterforce missions, antiballistic missile and air defense, and fallout protection for military forces which survive the blast and fire of nuclear attack . . . Throughout the changes clarifications in the relation of civil defense to military strategy and in the Army's civil defense support role, there have been certain important problems which civil defense will continue to encounter in the Department of the Army, just as it did previous to and during its operation in the Department of Defense. These problems involve the task of balancing such potentially divergent demands as: The need for effective military support to civil defense while not jeopardizing traditional military combat missions. The need for strong state and local

civilian organization while building effective federal control and military support. The need for civilian control and responsibility for civil defense while maintaining effective military support, and at the same time integrating certain civil defense functions with Army activities and with strategic defense. By far the most important task is the need to build a system which will effectively save lives, limit damage, and rebuild if an attack should occur."

THE ARMY'S ROLE IN CIVIL DEFENSE, by Steven T. Clark. Washington, Georgetown University Graduate School, 1961. 50 p. (Unpublished student paper.)

"This paper was undertaken to determine whether existing Federal legislation and Department of Defense policies were adequate to enable the Army to cope with the command, control, and public safety problems arising under anticipated poststrike conditions of mass casualties, mass damage, and mass social disorder." This paper "is a précis of the hearings' findings on civil defense and the role of the military within it. 'Current' Defense Department doctrine and Army Regulations are reviewed in light of that role as recommended by the Subcommittee." Contents: Nonmilitary Defense—Its Strategic Importance; Major Issues in the Army's Civil Defense Mission; Authority for the Army Mission in Civil Defense; British and Canadian Army Missions in Civil Defense; etc. With bibliography.

THE ARMY'S ROLE IN NATIONAL SURVIVAL, by Col. M. E. Clarke, in *Canadian Army Journal*, v.14, no.2 (Spring 1960) 13-16.

This is a "résumé of an address delivered by Colonel Clarke to officers of the [Canadian] Peterborough Garrison... [and presenting] a Militia Commander's views on the subject of National Survival, including the Army's role and the responsibilities of the civil authorities."

ASSISTANCE TO CIVIL DEFENSE BY RESERVES. HEARING BEFORE A SUBCOMMITTEE OF THE COMMITTEE ON ARMED SERVICES, UNITED STATES SENATE, EIGHTY-SIXTH CONGRESS, SECOND SESSION ON S. RES. 67. Washington, Government Printing Office, 1960. 40 p.

Hearings on S. Res.67 authorizing a study to determine whether the civil defense program may be furthered by assistance from the Reserve components of the Armed Forces.

CIVIL DEFENSE: EMERGENCY EMPLOYMENT OF ARMY RESOURCES. Washin on,

Headquarters, Department of the Army, 23 July 1965. 16 p. (Army Regulation No.500-70.)

"This regulation prescribes policies, responsibilities, and guidance for the Department of the Army relative to planning and operations in support of civil defense." Delves into: authority, definitions, department of defense policies, responsibilities, regional CD coordinating boards, Office of Emergency Planning (EP), Department of the Army responsibilities, concepts, and policies, Civil Defense Report (RCS CSGPO-136 (R1)).

CIVIL DEFENSE—THE MILITARY SUPPORT ROLE, by William P. Durkee, in *Army Information Digest*, v.19, no.11 (November 1964) 20-66.

"Although the Office of Civil Defense has been a member of the Department of Army team only since 31 March 1964, this civilian agency... actually has a long history of cooperation with the Army in fighting peacetime disasters." Mr. Durkee recounts some outstanding examples and concludes that "Civil Defense and the Army have long been partners in fighting disaster in peacetime. Today, we are seeing the inauguration of a closely integrated effort, with the support and direction from the highest defense officials, to place the vast resources, manpower, skills and equipment of the military in a better position to aid civil government under conditions of nuclear attack. A well-coordinated military and civilian effort is basic to a strong structure of national defense—a structure which serves the cause of this nuclear age."

MILITARY SUPPORT IN TIME OF CIVIL DISASTER, by Maj. Gen. John C. F. Tillson, III, in *Army Information Digest*, v.20, no.12 (December 1965) 21-23.

"As old as the Nation itself is the tradition of Armed Forces support and assistance to civil authorities in time of disaster—whether from natural causes or the ultimate disaster of nuclear war... Military aid during natural disasters is normally provided in response to a specific request from the affected state or local government through its Civil Defense headquarters. If the disaster is sufficiently widespread to warrant Presidential declaration of a 'major disaster'..., requests are coordinated between state and local Civil Defense headquarters and the regional office of the Office of Emergency Planning (OEP) which is part of the Executive Office of the President. Submission of the request to military authorities follows after this coordination has taken place."

• **MILITARY SUPPORT OF CIVIL DEFENSE**, by Col. Donald W. Shive. Tampa, Fla., Governor's Industrial Civil Defense Seminar, 1964. 15 p.

This address, made on 12 June 1964, details: the place of the military in civil defense; relationship between civil defense and other types of defense; three phases of military support; role of Reserves; use of Standby Reserves; and conclusion and summary.

MILITARY SUPPORT OF CIVIL DEFENSE. Washington, Department of Defense, 29 March 1964. 13 p. (Department of Defense Directive Number 3025.10.)

"This directive establishes Department of Defense policies, assigns responsibilities, and sets forth general guidance as to the requirement for military support of the national civil defense program and the basis for providing military support of civil defense under a national emergency involving a nuclear attack, or a condition which might precede a nuclear attack on the United States." This directive supersedes DOD Directive 3025.10, Subject: "Military Support of Civil Defense," April 23, 1963.

THE NATIONAL GUARD IN CIVIL DISASTERS, by Col. Bernard B. Abrams, in *Military Surgeon*, v.114, no.2 (February 1954) 100-103.

History of the Guard; and its secondary mission to serve local communities and the States in case of disaster, epidemic, fire, flood, or other civil emergencies. Examples of typical mercy missions performed by the Guard.

POST-RECOVERY AND THE RESERVES, by Edward A. Dolodziej, in *Army*, v.12, (July 1962) 25-28.

"The increased activity in civil defense, while a radical departure from the programs of previous post-World War II administrations, does suffer from a major, and perhaps fatal, defect. This is in largely ignoring the program of recovery under post-attack conditions. . . . At this juncture in the degate over civil-defense, there is a growing pressure to re-examine a proposal which many civil and military officials have been privately advocating for years: that the civil defense function of the armed forces reserves be expanded. They contend that under a variety of possible conditions resulting from nuclear attack, the organizational structure of the Army Reserve and Army National Guard, supplemented by the reserve units of the other services, is admirably fitted for the tasks of controlling war damage and of directing the nation's recovery." Although opponents

are pessimistic, the author maintains that Reserves have the skills, although at present their role is now too narrowly defined.

THE ROLE OF THE ARMY IN CIVIL DEFENSE (U), by Lt. Col. Henry W. Gibson. Carlisle Barracks, Pa., US Army War College, 1962. 59 p. (Student Thesis AWC LOG #62-2-64 U.)

"The purpose of this thesis is to examine and evaluate the capability of the Army to provide support for Civil Defense during an emergency. The study reviews the President's directive assigning certain responsibilities for Civil Defense to the Department of Defense. It delves into the testimony of scientists, engineers, and civic leaders and military authorities who appeared before Congressional Committees, and analyzes the history of European Civil Defense methods to determine the requirements for an adequate program." Bibliography.

THE ROLE OF THE MILITARY IN CIVIL DEFENSE MOBILIZATION, in *The Quartermaster Review*, v.40, no.1 (July-August 1960) 45 plus.

"Military assistance to local or state authorities in peacetime, as well as in wartime emergency, is a long-standing tradition of the armed forces of our country. Modern warfare has created a condition wherein the entire resources of the Nation must be fitted into the war plan. The plans for the non-military defense of the Nation are contained in the National Plan for Civil Defense and Defense Mobilization . . . The Department of Defense has issued positive guidance to the military departments concerning the responsibilities of the Armed Forces in rendering assistance to the national civil defense effort . . . [and] The Department of Defense provides planning and training assistance to civil authorities at all levels to assist them in the attainment of an adequate national capability for civil defense operations."

STATE HEADQUARTERS AND HEADQUARTERS DETACHMENT, ARMY NATIONAL GUARD HEADQUARTERS, STATE AIR NATIONAL GUARD; ORGANIZATION. Washington, Department of the Army and the Air Force, 30 March 1966. 4 p. (NGR 15-1; ANGR 23-01).

Purpose, policy, authority, mission, capabilities, tables of organization/distribution, mobilization, command. The mobilization section of this regulation states in part: "In the event of a civil defense emergency or during the prelude to such a situation, the State headquarters in each of the States, less ele-

ments required for the conduct of Selective Service and State defense activities, will be ordered to active duty as the State level headquarters to execute the

ZI Army Commander's plan for control of military support of civil defense within each respective State . . ."

V. Civil Defense in Foreign Countries

A. MISCELLANEOUS COUNTRIES

Korzum, L. [CIVIL DEFENSE IN THE NATO COUNTRIES] *Grazhdanskaia oborona v stranakh NATO*. Voennye znaniia, v.42, May 1966: 28-29.

Studies the scope and tendencies of civil defense efforts in the United States and the countries of Western Europe. The author asserts that the "ruling classes of imperialist states" use civil defense programs and pronouncements as a means of arousing anti-Soviet feeling among their citizenry. Western civil defense efforts are also employed as a means of increasing military pressure upon the Socialist nations and as a source of great profit for the monopolists. The U.S. civil defense program, however, has encountered great difficulties and has foundered on many scientific and technical points. (Extracted from *Arms Control & Disarmament*, v.2, no.4.)

EUROPEAN CIVIL DEFENSE PLANS, by Horst V. Zitzewitz, in *Military Review*, v.41, no.10 (October 1961) 21-30. Translated from the original article which appeared in *Wehrkunde* (Federal Republic of Germany) April 1961.

"The German civil defense program labors under a disadvantage somewhat similar to that experienced in the United States. The decentralized federal structure of the German Republic, like that of the US, exhibits both weaknesses and strengths. Federal civil defense measures in Germany become effective only in time of war or international crisis. Civil defense manpower cannot be employed in peacetime to cope with catastrophes and emergencies, as it can in Great Britain, Denmark, Belgium, and France." The author in his discussion deals with: Volunteer Defense Service (in Germany); Disadvantages of Federalism; Total Defense as a Concept; England's Volunteer System; British Local Organization; The Scandinavian Example; Switzerland Reorganizes; The Benelux Countries; Draft Law in the Netherlands; France's National Service; and Common Basic Features.

IS CIVIL DEFENCE STILL IMPORTANT? by W/Comdr. John Hodsoll, in *The Fifteen Nations*, no.13 (1960) 34-35 plus.

"In attempting to answer this question, it is really necessary to ask another: Has the risk of war disappeared? Or rather, has the risk of that sort of war which puts the civil population in the front line disappeared? If the answer is that the risk still exists, then obviously the civil population must be defended, i.e., there must be Civil Defence; and it would be a bold and perhaps rash assumption to say that there will be no more wars. It must be remembered also that Civil Defence may be just as necessary in a limited war, i.e., a war fought with conventional weapons, as with an all-out thermo-nuclear war or one using atomic weapons of a more limited capacity. In fact, as long as there is any risk at all of the civilian population being directly attacked, then there must be an organization to look after them. There is another aspect of Civil Defence, however, which has come to the fore since the war, and that is its great value in helping deal with natural disasters . . ." The author, in attempting to answer the question posed in the article's title, examines "just what its function is in relation to the population." Evolution of the Need for Civil Defence; Maintenance of the Morale of the Population; Civil Defence and the Armed Forces; The Humanitarian Aspect of Civil Defence; and Civil Defence as a Part or the Deterrent.

A NATO VIEW: THE IMPORTANCE OF CIVIL EMERGENCY PLANNING, in *Civil Defence Bulletin (Australia)*, v.5, no.4 (October 1963) 6-9.

A condensation of a NATO pamphlet.—"Article 3 of the North Atlantic Treaty lays down that: 'In order effectively to achieve the objectives of the Treaty, the parties, separately and jointly, by means of continuous and effective self-help and mutual aid, will maintain and develop their individual and collective capacity to resist armed attack.' Consequently the members of the Alliance are obliged to maintain and develop their civil potential in peacetime, and to prepare for the particular situations arising in time of war. Civil Emergency Planning, as far as NATO is concerned, covers the measures which are necessary to enable each NATO country to resist any kind of attack, including a thermonuclear at-

task." This consideration covers: Emergency Plans; Survival Requirements (Maintenance of Government Control, Survival of Population, Civil Defense, Hospitals, Food, Transportation, Communications, Fuel Supplies, Industry, Manpower, International Supply Machinery).

STUDY OF CIVIL DEFENSE ORGANIZATION AND DOCTRINE IN FRIENDLY NATIONS, by Rogers S. Cannell and James W. Kerr. Menlo Park, Calif., Stanford Research Institute, 1963? Various paging.

"This is a progress report on studies undertaken by SRI under Contract No. OCD-OS-63-184 . . . This progress report presents results from a preliminary European survey . . . and suggests a work plan for the study of doctrine and organization of civil defense in a number of friendly nations. The objective of the study is to find approaches used by other countries which might have application to the U.S. civil defense system . . . The purpose of this report is to: (1) suggest preliminary findings or impressions based on the initial planning interviews, (2) give guidance to the SRI research teams who will visit Europe on the data sources, and to brief them on the main outlines of the civil defense structures in the various countries, and (3) to inform cognizant European officials of the objectives and requirements of the study." Appendixes: Federal German Republic—Proposed Government Structure—Summary of Emergency Laws; Switzerland—Proposed Laws—Laws of 1950, 1952; Literature Survey—Bibliography; etc.

B. AUSTRALIA

THE ROLE OF THE POLICE IN CIVIL DEFENSE, in *Civil Defence Bulletin (Australia)*, v.4, no.4 (October 1962) 42-46.

The article, outlining the role of the police of New South Wales (Australia) in civil defense, is prefaced by remarks providing an understanding of the Civil Defense Organisation.

C. CANADA

Wallace, J. F. **CIVIL DEFENSE IN NORTH AMERICA: CANADA**. EMO national digest, v.5, Dec.1965: 18-21.

Text of presentation before the Conference of the California Civil Defense and Disaster Association, Sept. 1965.

A summary of Canada's program by the director, implementation branch, Emergency Measures Organization (EMO). Mr. Wallace traces the historical evolution of civil defense emergency measures in Canada since 1948, under the guidance of EMO. Today, he says, policy is formulated by a special committee of the federal cabinet, and decisions are filtered down to the regional and local levels of government. Facilities are provided for the continuation of key elements at all levels of government, including a headquarters for regional emergency government. Thirty-four emergency headquarters care for municipal government operations, with a staff composed of both local and federal officials. The regional shared cost is 75 percent federal and 25 percent regional, with the same ratio applied to federal-local funding arrangements. Communication between the various facilities is via teletype and radio. The army is the agency responsible for warning the public in the event of attack and fallout, and maintains representatives at NORAD. The system is activated by the Prime Minister of Canada, with the army sounding the warning signals to all units. The Emergency Broadcasting System can be hooked up to all radios and TV stations. Radiological defense measures and public shelter space are being provided, and medical and hospital facilities expanded. The army will control any area attacked, with the War Supplies Agency responsible for providing consumer goods, housing, and transportation. Canada and the United States in 1952 (amended in 1963) agreed on the procedures to follow in case either, or both, were involved in a nuclear attack. (Extracted from: *Arms Control & Disarmament*, v.2, no.3.)

CIVIL DEFENCE IN PEACE-TIME DISASTERS, by Lt. Col. C. F. C. Bentley, in *Canadian Army Journal*, v.14, no.3 (Summer 1960) 15-19.

"Civil Defence is organised for service in war, but the wide scope of its training fits in to help in almost any kind of emergency." The author studies some major disasters in the past and examines how Civil Defense or lack of it affected the situation. "Examples quoted in this article show how the effects of a disaster can be increased to an alarming extent when there is no effective organisation available to deal with it."

THE CIVIL DEFENSE DISCOURSE, by Jiri Nehnevajsa, in *EMO National Digest*, v.7, no.1 (February 1967) 8-12 plus.

"This is the text of an address given at the Provincial Co-ordinators' Conference, held at the Canadian Emergency Measures College, Arnprior, On-

tario, from November 29 to December 2, 1966. The author stresses some strategic, political, technical and public attitude factors involved in achieving civil defense readiness."

JOINT UNITED STATES/CANADA CIVIL EMERGENCY PLANNING COMMITTEE, in *EMO National Digest*, v.6, no.4 (August 1966) 1-7.

The documents included here "were presented at the annual meeting of the Joint United States/Canada Civil Emergency Planning Committee, held in Ottawa on June 7, 1966. Governor Farris Bryant, Director of the Office of Emergency Planning and Mr. W. P. Durkee, Director of the Office of Civil Defense headed the group of eight senior United States Officials; Canada's senior emergency planners were headed by Mr. C. R. Patterson, Director General, Canada Emergency Measures Organization, and Chairman of the Meeting." Papers included: Review of United States National Civil Emergency Planning Activities Since Last Meeting (OEP Report CEPC D/1-66); Review of United States Civil Defense Activities Since Last Meeting (OCD Report CEPC D/2-66); and Review of Civil Emergency Planning Activities in Canada Since October 1965 (CEPC D/3-66).

NATIONAL SURVIVAL: EMERGENCY GOVERNMENT, by R. L. Beatty, in *Canadian Army Journal*, v.16, no.2 (1962) 18-20.

"No responsible government today can neglect the possibility of nuclear war... [The Canadian] Federal Government is therefore making the necessary preparations in peacetime to ensure effective government in wartime on the assumption that if the country is to survive the effects of possible nuclear attack, there must be a government in existence which could direct the survival policy of the nation." The program for the provision of emergency government headquarters consists of: "(a) The provision of suitable facilities to ensure government can function under nuclear attack conditions and to permit the closest integration of federal, provincial and local elements. (b) The analysis and definition of emergency government responsibilities throughout the system. (c) The development of procedures for manning emergency facilities."

NUCLEAR DETERRENT WITH OUT-MODED CIVIL DEFENCE? by Col. Horst von Zitzewitz, in *NATO's Fifteen Nations*, v.3, no.4 (August-September 1963) 72-76 plus.

"Lessons drawn from the Cuban crisis for the nonmilitary defence of the North American conti-

nent." The author states that this article "will serve to demonstrate that even the two neighbours on the North American continent, whose military and air defences in the Atlantic area have been combined and integrated in NATO and NORAD respectively, are following their own, completely separate and diverging ways at the present time with regard to measures for the survival of state and people." He discusses: Civil Defence Today in North America (Canada and the United States); The Military Defence of the "North American Atomic Stronghold"; Canada's Modern "Army without Weapons"; Civil Defence at Zero Hour; Is Civil Defence Not a Deterrent? The author concludes that, in his opinion, "civil defence does indeed constitute a real deterrent. However,—and again with reference to North America—it can be a deterrent only if non-military defence reaches the same high standard in both states of the continent. For a nuclear attack would not be directed at either Canada or the USA alone, but at the continent as a whole. In this age of nuclear missiles it is time people stop thinking and acting in accordance with outmoded national schemes for civil defence—and that holds good for Europeans as well."

PUBLIC INFORMATION AND NUCLEAR WAR, by Lt. Col. J. D. Donoghue, in *Canadian Army Journal*, v.16, no.3 (1962) 26-30.

"In the past, the provision of information to the Canadian people in wartime has been considered important by civil and military authorities alike. But the very nature of a nuclear war involving an attack on North America has made public information one of the factors which well might decide success or failure of the defence of the continent... This gives both urgency and importance to the public information operations plan. The present plan is not perfect... But considerable progress has been made towards ensuring that in the event of a nuclear attack authoritative information as well as warnings, instructions and advice would reach the Canadian people."

PUBLIC INFORMATION AND NUCLEAR WAR, by Lt. Col. J. D. Donoghue, in *Civil Defence Bulletin (Australia)*, v.5, no.3 (July 1963) 28-30.

Reprinted from *Emergency Measures Organization, Canada, National Digest*, December 1962.— "Providing information to the public in peace and war has been recognized for centuries as a requirement by civil and military authorities... The importance to defence of an informed public is even greater for nuclear than conventional war. And the

need to inform the public on the subject will remain constant until such time as the climate for true peace has been developed universally and the control and inspection of arms has been accepted and effectively established . . . It is not possible in this article to provide the details of all the emergency measures information now available to the public from the [Canadian] Federal Government. Therefore, in what is a necessary over-simplification, the information being provided . . . [is summarized.]

REFLECTIONS OF CIVIL DEFENCE AND SURVIVAL, by W/Comdr. John Hodsoll, in *EMO National Digest*, v.6, no.2 (April 1966) 1-9 plus, no.3 (June 1966) 12-20, no.4 (August 1966) 8-20, no.5 (October 1966) 10-17, no. 6 (December 1966) 10-17 plus.

"Sir John Hodsoll has compiled in twenty chapters his personal views on the important things which should and need to be done to develop a healthy civil emergency programme." Contents: Against What Forms of Attack Should Preparations Be Made?; The Time and Warning Factors; The Survival Problem; The Psychological Aspect of Protecting the Civil Population; Civil Defence and the Public; Shelter and Evacuation; The Structure of the Civil Defence Forces; Civil Defence Operational Control Organization; Civil Defence Operations; Maintenance of Civil Government; Maintenance of Industry and Public Utilities; Maintenance of Communications; Ports and Harbors; Fuel Supplies; Food and Other Supplies; Medical and Public Health Problems; Military Relations with Civil Defence; Self-Help; and the Survival Plan.

THE ROLE OF PREVENTIVE MEDICINE IN NATIONAL SURVIVAL, by Col. R. D. Barron, in *Civil Defence Bulletin (Australia)*, v.6, no.4 (October 64) 23-31.

Reprinted from Canada's Emergency Measures Organization Digest, December 1963.—"The problems of preventive medicine, hygiene and sanitation that may be encountered in any national emergency may be varied and extreme, and these varied problems may appear early or may occur some time after the initial incident. Similarly, these problems may be associated with the immediate disaster area or may be problems related to or occurring in areas remote from the immediate disaster area. It is therefore necessary to define clearly the problems of preventive medicine in its broadest sense in relation to variety, and in relation to a time frame, as well as a zonal or area distribution. Health services must be fully co-ordinated with other services in

a disaster area in order to be effective. The preventive medicine services as well as the medical and surgical services, fire fighting, rescue, transportation, etc., must be co-ordinated or else further confusion will be created and much effort lost." Preventive Medicine in Pre-Attack; Preventive Medicine in the Survival Phase: The Role of the Sanitarian in National Survival.

SENIOR OFFICERS' BRIEFING ON CIVIL EMERGENCY PLANNING, by J. P. Brennan, in *EMO National Digest*, v.6, no.6 (December 1966) 3-9, v.7, no.1 (February 1967) 1-7.

"International and national geopolitics, foreign policies and strategies presented by recognized authorities provided a background to a two-day Senior Officers' Briefing on Canadian civil emergency planning recently when Canada Emergency Measures Organization held the first forum of its kind at the Canadian Emergency measures College, Arnprior Ontario . . . In response to request by the Digest the main speakers . . . [summarized] their presentations for publication." Soviet Foreign Policy and the Three Worlds, by R. H. McNeal; Red China's Foreign Policy, by Harold C. Hinton; The Crisis in NATO, by John Gellner; The Management of Human Behaviour in Disaster, by Horace Beach; The Strategy and Economics of Intercontinental Missile defence, by G. Lindsey; The United States Military Strategy, by Melvin Conant; Emergency Planning in Canada Today, by C. R. Patterson.

THE STATE OF EMERGENCY WELFARE SERVICES, in *EMO National Digest*, v.6, no.1 (February 1966) 1-4.

"This article is intended to give some indication of the state of preparedness existing across . . . [Canada] as far as Emergency Welfare Service (EWS) is concerned. The true test would be the speed and effectiveness with which communities could provide for the survival of their own citizens as well as for other homeless victims of disaster. Since this state of preparedness can be assessed only by the provinces and communities concerned, this discussion will be concerned primarily with the ways and means by which the federal EWS organization assists the regions in attaining an operational capability to cope with any disaster."

D. FRANCE

Raoul, Francois. [ALERTING THE POPULATION] L'Alerte aux populations. Forces aeriennes francaises, 20. annee, Oct. 1965:463-473.

Outlines the organization of the French civil defense warning system. The system is directed by a national civil defense office (Service national de la Protection civile), which is responsible to the Ministry of the Interior. In close cooperation with the air force's control and detection centers, the civil defense apparatus has devised and is improving systems for receiving and quickly broadcasting information on air attack danger and nuclear fallout conditions to the population and civil authorities. An adequate alert system is a fundamental requisite for assuring the survival of the population. (Extracted from: *Arms Control & Disarmament*, v.2, no.1.)

CIVIL DEFENSE IN FRANCE; FINAL REPORT, by Harvey Dixon and others. Menlo Park, Stanford Research Institute, 1964. 68 p. (SRI Project IM-4559.)

Prepared for Office of Civil Defense, Department of the Army, Contract OCD-OS-63-184, Subtask 2621A.—“This report analyzes French civil defense activities that may be helpful to the U.S. program. One noteworthy aspect is the outstanding peacetime disaster organization known as Plan ORSEC, which contains several effective legal and operational features. Other interesting aspects are the French plans for military participation in civil defense, for conscripting personnel to civil defense organizations, and for organizing feeding and medical aid programs. Although the French have been less active in developing a comprehensive civil defense program than several other European countries and the United States, their efforts are increasing and are greater than the official French civil defense budget might indicate.” With: references, illustrations, and tables.

E. GERMANY

CIVIL DEFENSE: A GERMAN VIEW, in *Bulletin of the Atomic Scientists*, v.19, no.2 (February 1963) 46-48.

Excerpts from a publication on civil defense, by the Association of German Scientists, which appeared in the October 10, 1962 issue of *Frankfurter Allgemeine*.—The article states that “The goal of our national security as well as that of our allies is to reduce the possibility of war by means of deterrence. Some argue that military deterrence will be incomplete and hardly credible unless the population is safely sheltered against destruction by the enemy . . . Such a foundation for a civil defense system in West Germany exhibits great weaknesses.” In summary,

“The requirements of a purposeful civil defense system depend upon the conditions for which . . . shelters are to afford protection. Some argue that shelters can be considered effective if only they provide safety against enemy attack aimed at large segments of the population. Others, especially humanitarian advocates, consider civil defense meaningful, even if its (partial) success depends on tacit or explicit cooperation of the aggressor in avoiding such targets . . . But a free decision is contingent on whether or not civil defense is possible at all against a planned and aimed attack.” The article concludes by recommending steps toward a system of shelters providing fallout protection and weight-resistance.

Schulze Henne, Karl. [CIVIL DEFENSE CORPS FOR STRENGTHENING THE DEFENSE ALERT] Zivilschutzkorps zur Verstärkung der Schutzbereitschaft. Wehr und Wirtschaft, v.10, Jan. 10, 1966:56-57.

The creation of a German Civil Defence Corps to cope with the dangers and damage threatening the civilian population in the event of armed attack takes a logical place in civil defence planning. It supplements the preventive measures provided for under the Self-Defence and Raid Shelter Law and thus enhances the preparedness of population and industry. Only through the employment of complete units of Technical Troops is it possible to render the hard-pressed population any effectual aid and to preserve or repair vital survival and defence installations. Fully motorized, equipped with special tools and with uniform training and leadership, the Civil Defence Corps is pre-eminently suited for operations of this kind. (Extracted from: *Arms Control & Disarmament*, v.2, no.3.)

CIVIL DEFENSE IN GERMANY, by Arthur A. McGee. Menlo Park, Calif., Stanford Research Institute, 1965. 49 p. (SRI Project MI-4559.)

Prepared for Office of Civil Defense, Department of the Army, Contract (O'D) (OS-63-184, Subtask 2621A).—“This report contains the results of the study of civil defense planning and preparation in the Federal Republic of Germany. The studies are primarily oriented toward defining operational organization, although policy, planning, and training organizations that have had a strong impact in promoting the growth of civil defense preparedness were also investigated.”

CIVIL DEFENSE IN THE SECOND WORLD WAR: DOCUMENTATION AND REPORT OF EXPERIENCES WITH REGARD TO BUILD-

UP AND OPERATION. *Der Zivile Luftschutz im Zweiten Weltkrieg; Dokumentation und Erfahrungsberichte über Aufbau und Einsatz*, by Erich Hampe. Frankfurt am Main, Germany, Bernard & Graefe Verlag für Wehrwesen, 1963. 627 p. In German.

The author provides the historical background of civil defense activities before World War II and CD organization and activities during World War II. He delves into civil defense law and regulations, proposed legal means for improvement, air-raid protection, organization during 1933-1939, the cost of air warfare to the German people, the cost of air attacks on industry, agriculture, and communications, organization of CD in action, Air Force cooperation with the CD organization, post attack recovery, examples, protective measures, among many others. With: glossary and photos.

FIELD NOTES ON WORLD WAR II GERMAN FIRE EXPERIENCE, by Carl F. Miller and James W. Kerr. Menlo Park, Calif., Stanford Research Institute, 1965. 68 p. (SRI Project No. MU-5070.)

Prepared for Office of Civil Defense, Department of the Army, Contract No. N228-(62479) 65419, OCD Subtask No.2536D.—“To obtain and preserve available basic data on World War II fires in Germany, the authors visited . . . key locations and authorities in Germany and the United Kingdom in February and March 1965. This report describes the locations and authorities visited and summarizes the types of recorded data that were found, as well as the results of conversations during the visit.” Part II—Summary of Collected Records and Information on German World War II Fires, provides, among many others, following type of information: The Hamburg World War II Fire (and Police) Department Report Records; Timing and Weight of Attack; Fire Environment; Damage; General Behavior of People; Shelter Performance and Environments; Rescue Operations; General Operational Problems; etc.

GERMAN CIVIL DEFENSE BEFORE AND DURING WORLD WAR II. Washington, Department of the Army, Assistant Chief of Staff for Intelligence, 1962. 99 p.

Translated from the German language from a document, *Der Deutsche Luftschutz vor und während des 2. Weltkrieges*, published by Karl A. Pfour in West Germany in 1957.—Contents: German Civil Defense before World War II (Buildup and Top-Level Organization of German Civil Defense; Spe-

cialized Organization of German Civil Defense); German Civil Defense During World War II (Organization of the Supreme Command; Civil Defense and Its Command in National Territory; Civil Defense Outside National Territory; Supply in Civil Defense); etc.

Monitor, Hans-Jorg. [NATIONAL DEFENSE IN THE GERMAN FEDERAL REPUBLIC—A CRITICAL LOOK] *Die Landesverteidigung in der Bundesrepublik—eine kritische Betrachtung*. Wehrkunde, 14. Jahrg., Sept.-Nov. 1965: 450-454, 525-529, 586-590.

Compares and contrasts German national (non-NATO) defense measures with the national defense apparatus of the Scandinavian countries, Switzerland, and Austria. This comparison revolves about major areas of military defense, inculcation and retention of morale in the population and armed forces, civil defense, and economic defense. Several reforms of Germany's defense along the lines of its neighbors' achievements are suggested, e.g., a more even distribution of forces than the present 90 percent under NATO command and 10 percent under national command; a more active reserve policy; greater instruction of the adult and school age population in defense; civil defense education, inspection, and provisioning; and, finally, an honest assessment and fulfillment of the requirements for sustaining the civilian population and defense forces in the event of a war with modern weapons. (Extracted from: *Arms Control & Disarmament*, v.2, no.2.)

F. GREAT BRITAIN

THE CIVIL DEFENCE FRAUD, by M. C. Berenbaum, in *New Statesman*, v.60, no.1538 (3 September 1960) 292-293.

“In June of last year the US Congress Special Subcommittee on Radiation held a series of hearings on ‘The Biological and Environmental Effects of Nuclear War’ . . . in which expert testimony was taken. The evidence in these Hearings dispel any doubts as to the probable effects of nuclear warfare on Britain. Their implications for this country are catastrophic . . . Civil Defence authorities assert that, in the very worst circumstances imaginable, at least half the population of this country would survive a nuclear war. Many, convinced of this, feel morally bound to support Civil Defence, which they believe will rescue and give succour to victims. This claim may have been valid ten years ago, but the facts recorded in the volume of Hearings show that

it no longer has any basis. It is also claimed that Civil Defence is necessary as part of the deterrent, that an aggressor will hesitate if he knows the population is prepared . . . The answer must be that the main purpose of Civil Defence is to soothe the fears of the electorate and to win support for the deterrent policy . . ."

White, Michael. CIVIL DEFENSE. 2d ed. [Crawley, Sussex, Published by the Conservative Political Centre for the Conservative Research Department, 1964] 19 p. (Local government series, 10)

Explains and justifies civil defense in Great Britain. The effects of nuclear attack on Britain and the organization of the defense that might save millions in such an attack are described. (Extracted from: Arms Control & Disarmament, v.1, no.4.)

CIVIL DEFENSE IN THE UNITED KINGDOM; FINAL REPORT, by Harvey Dixon and Kendall Moll. Menlo Park, Calif., Stanford Research Institute, 1964. 62 p. (SRI Project No. IM-4559.)

Prepared for Department of Defense, Office of Civil Defense.—"This report analyzes British civil defense experience that may be helpful to the U.S. civil defense program. One notable aspect is British emphasis on recruiting and training of a large civil defense cadre, comprising about 1% of their total population. This type of force, essential to operational effectiveness in an emergency, has been built and maintained by various techniques applicable to the United States. Many other relevant doctrinal and policy aspects are also discussed. For example, because the British feel strategic warning of attack is likely, they are planning for possible evacuation from cities. Although they have not started a shelter program, the over-all level of their civil defense efforts is at least twice as great as that of U.S. efforts." Several chapters also deal with historical background, public information, and financial support. With illustrations and tables.

HOW MUCH SHELTER? in *The Economist*, v.205, no.6227 (20 December 1962) 1258-1259.

"Britain spends about 20 million pounds a year, from central government funds, on civil defence against nuclear attack; and it still maintains over 600,000 volunteer part-timers in the civil defence forces (including industrial civil defence, hospital and fire auxiliaries and the observer corps), in addition to the obligation to prepare for civil defence laid on various local authority services. This is a tiny premium to pay if the force is efficiently organised, and if it could really do any good were catastrophe to

come to this small, crowded and (in nuclear terms) indefensible island. But is it, and could it? Even more than other defence arguments this one is almost impenetrably hedged with military uncertainties and political prejudices. This is why it almost never gets a serious airing." The article concludes that "The reorganisation of the civil defence services has not yet been nearly drastic enough."

THE ILLUSION OF CIVIL DEFENCE, by Gerard Piel, in *New Statesman*, v.62, no.1604 (8 December 1961) 872-874 plus.

"What is the significance of the fall-out shelter craze now sweeping the US? Do such shelters offer any effective means of civil defence in a thermonuclear war? Now some construction firms in this country are seeking to profit in the same way from public anxiety about fall-out, while the government . . . presses a civil defence programme that contradicts its own nuclear policy. This article . . . raises vital questions of public interest—for Britain as well as America."

LEADERSHIP—THE PROBLEMS AND NEEDS OF CIVIL DEFENCE, by Wing Comdr. John Hodsoll, in *Journal of the Royal United Service Institution*, v.110 (February 1965) 73-76.

"Civil defence is unique in many ways. It has no disciplinary code in the accepted Service sense; it is largely composed of part-time volunteers, and it not only had no traditions before the war but was apt to be regarded . . . [lightly] by some sections of the community and as a menace by a small minority. And . . . it is made up of a number of loosely linked parts. What then, are the qualities of leadership required in this newest offspring of total war? And how can these qualities be found, encouraged, and taught?"

REPORT ON 25 YEARS WORK; WVS (WOMEN'S VOLUNTARY SERVICE) CIVIL DEFENCE, 1938-1943. London, H. M. Stationery Office, 1964. 103 p.

The Dowager Marchioness of Reading states in the introduction that "This twenty five years' report is in the nature of an account rendered by a mass of women, of what they have done with tasks entrusted to them over a span of a quarter of a century, realising that the shape of voluntary service has changed from the charitable patronage of the past to the statutory aid of the present. It tells briefly, . . . of heroic deeds, of pain endured and courage shown . . . in achieving the sum total." Contents: Organization; Civil Defence; One-in-Five; Emergency Work; Children; Refugees and Repatriates; Clothing; Old

People; Housing; Health and Hospitals; Probation and Prison Welfare; Transport; Welfare for the Armed Forces; Welfare for the Armed Forces Overseas; Other WVS; WVS Trust; Overseas Contracts; and Appendices.

Merton, Walter. UNITED KINGDOM CIVIL DEFENCE. in *EMO National Digest* v.5, Dec. 1965: 16-17.

"Excerpts from an address by Air Chief Marshal Sir Walter Merton... reprinted from the *Journal of the Association of Civil Defence Officers*, vol.12, no.3, August 1965."

Reports Soviet capabilities to attack Great Britain, and stresses that defense planning is an absolute necessity, despite developments in achieving a test-ban treaty. The Soviet military threat still exists, and their capability to reach prime British targets is known. The need to maintain a monitoring system and a corps of officials to organize survival plans is evident. (Extracted from: *Arms Control & Disarmament*, v.2, no.3.)

THE U.K.—EDUCATION SERVICE AND NUCLEAR ATTACK, by Herbert Andrew, in *Civil Defence Bulletin (Australia)*, v.6, no.3 (July 1964) 46-48.

"Following the publication of the Defence White Paper 'Statement on Defence 1962—The Next Five Years,' the Government initiated discussions with the local authority associations about the changes and developments in civil defence which appeared to be necessary as a result of developments in defence planning generally. These discussions have covered proposals for the re-organisation of the Civil Defence Corps and the Auxiliary Fire Service, plans for the possible dispersal of mothers, children and other young people in priority classes from major centres of population, proposals for changing the emergency control structure within the regions and arrangements for the care of the homeless. They have now been extended to cover the role of the education service and the use of educational premises immediately before and after nuclear attack... Immediately before and after any such attack the most important consideration would be the maintenance of public morale, the personal safety of children and young people, and the need to make educational premises available for civil defence purposes where required. These considerations suggest that plans in respect of schools, further education establishments and teacher training colleges should not be left until an

emergency develops, but should be prepared in advance so that they could, if necessary, be put into operation at the appropriate time in any precautionary period which might be expected to end in actual attack. The Government's policy is explained in... [this paper]."

UNITED KINGDOM QUARTERLY FORUM, in *EMO National Digest*, v.6, no.2 (April 1966) 14-16.

Reprinted from "The Association of Civil Defence Officers Journal," vol.12, no.4, November 1965. "Six panel members were asked to comment on the question: 'Generally speaking the Press has never been very generous in its support for Civil Defence, yet the success of our efforts must depend a great deal upon a sympathetic Press. What can or should be done at all levels to encourage a greater understanding of Civil Defence by both national and local newspapers?'" Four replies extracted from the "Journal" are provided in this article.

UNITED KINGDOM—WOMEN IN CIVIL DEFENCE, in *Civil Defence Bulletin (Australia)*, v.5, no.1 (January 1963) 38-42.

The United Kingdom's Women's Voluntary Service set up a "One-in-Five" scheme, whereby its goal was to involve in one defense work one out of every five adult females of the population. This figure was decided upon as reasonable for making an impact upon public opinion, and it was also a target that could be achieved. The purpose of the scheme: "To give reliable information to the women of the Nation of the dangers which Nuclear Warfare could bring and to draw attention to the many simple things any housewife could do to save life and prevent unnecessary casualties. To counteract the effects the publicity given to nuclear weapons may have had on the public morale. To contradict the inaccurate information contained in works of fiction put across through television, broadcasting, the press, films and novels. To stress that some knowledge of the means of protection promotes the will to survive, which is an important factor in... National Security." Contents: The Evolution of the Scheme; The Scheme; The Talks; The Organization; The One-in-Five Organizer; The Speakers; Audiences; Records; Publicity.

G. NORWAY

CIVIL DEFENCE: NORWAY. Oslo, Civil Defence Central Administration Information Service, 1964. Unpaged.

Scene facts and figure and pictures on Norwegian Civil Defense, set against the general background of the country. Charts show the Central Civil Defense Administration, as well as the organization of a local civil defense area in Norway.

Zitzewitz, Horst von. [NORWEGIAN TOTAL DEFENSE] Die Gesamtverteidigung Norwegens. Wehrkunde, 14. Jahrg., Sept. 1965:459-465.

Sketches Norway's national defense efforts—the organization, size, and duties of military and civilian defense services; expenditures; NATO ties; and the country's unfavorable geomilitary position. Norwegian defense is complicated by a strong pacifist current and opposition to atomic weaponry. Its NATO commitment thus stipulates that in peacetime allied troops will not be stationed in Norway and national troops will not be integrated with NATO forces until war breaks out. The Soviet Union is campaigning with some success to gain Norwegian and Danish support for a slightly revised version of the Rapacki Plan, which would include both these nations in a denuclearized central Europe. A serious threat stems from the positioning of eight Soviet divisions on Norway's northern-most border, ready to seize ice-free ports on the Norwegian coast for wartime fleet support. Norway spends relatively little on active defense, but it possesses an excellent civil defense apparatus and a program that physically and psychologically prepares the population and economy to resist aggression. (Extracted from: Arms & Disarmament, v.2, no.2.)

H. SAUDI ARABIA

SAUDI ARABIA CIVIL DEFENCE, in *EMO National Digest*, v.6, no.2 (April 1966) 20-22.

"A report on a programme for the organization of civil defence administration in Saudi Arabia prepared by the International Civil Defence Organization, Geneva."

I. SWEDEN

[CIVIL DEFENSE] International civil defence, v.12, May 1965: 1-12.

Bulletin of the International Civil Defence Organisation. Contents.—True international disaster relief system.—The position of Civil Defence in Sweden.—Bibliography.—Science & techniques: fighting forest fires with viscous water; fire-bomb

explosion at high altitudes.—The I. C. D. O.'s roll of honour.—New products and equipment.

A review of the state and techniques of present civil defense systems. (Extracted from: Arms Control & Disarmament, v.2, no.1.)

Christ, Rolf F. [SWEDEN AND HER AIR DEFENCE SYSTEM] Schwedens Luftverteidigung. Wehr und Wirtschaft, 9. Jahrg., Dez. 1965: 662-670.

A study of Sweden's defence in its coordinated political, military and economic aspects reveals that the country has succeeded in bringing her extremely difficult geographical situation into harmony with her economic potential. This presupposes the development of a politico-military concept of purely defensive nature and exactly limited scope. The resulting defence organization is above all impressive because of its markedly humanitarian approach to the defence needs of the population. Civil defence shelters, evacuation plans and installations in Sweden are so advanced as to be an example to the rest of the world. Even the world's greatest military power, the United States, has nothing remotely comparable to offer. Secondly, the Swedish defence effort proves conclusively that an industrial nation which takes the trouble to draw to the full extent on its technical intelligence in the performance of its defence tasks will also enjoy the overall economic advantages of technical and scientific progress in its industry and keeps its products competitive on the world market. An outstanding example of this technical standard is provided by the new Swedish Viggen 37 aircraft, which need fear no comparison with the latest designs of American or European provenance. (Extracted from: Arms Control & Disarmament, v.2, no.2.)

SWEDISH CIVIL DEFENCE REPORT (1965) SUMMARIZED, in *EMO National Digest*, v.6, no.5 (October 1966) 21-23.

"The Swedish Civil Defence Administration in its recently submitted report summarizes its opinion of the possibilities and prerequisites of civil defence in Sweden and the Administration's requests for the remainder of the reorganization period which will, in the main, be concluded in the early 1970s."

J. SWITZERLAND

SWISS CIVIL DEFENSE, by Arthur A. McGee. Menlo Park, Calif., Stanford Research Institute, 1965. 47 p. (SRI Project MU-4559.)

Office of Civil Defense Contract OCD-OS-63-184, OCD Work Unit Number 2621A.—"This re-

port contains the results of the study of civil defense planning and preparation in the Swiss Federation. The study is primarily oriented toward defining operational organization, although policy, planning, and training organizations that have had a strong impact in promoting the growth of civil defense preparedness were also investigated." With: illustrations and tables.

K. USSR

[CIVIL DEFENSE IN RURAL REGIONS]
Grazhdanskaya oborona v sel'skikh raionakh.
Moskva, Voennoe izdatel'stvo ministerstva oborony
SSSR, 1965. 159 p.

The first comprehensive Soviet text on civil defense in rural areas, stressing the importance of civil defense operations in the countryside in an era when the outbreak of major war is expected to cause the loss of all municipal centers. Sample plans for dispersing the populace and civil institutions are included. (Extracted from: *Arms Control & Disarmament*, v.2, no.1.)

CIVIL DEFENSE IN THE SOVIET UNION,
by Leon Gouré. Berkeley, Calif., University of California Press, 1962. 207 p.

"The main purpose of this study is to inquire into the doctrine of Soviet civil defense and describe the actual program that is being carried out, as well as to relate both doctrine and program to the more general attitudes and beliefs they reflect. The material and the discussion may also permit some insight into likely Soviet reactions should Western nations launch any large-scale civil defense programs of their own." Concludes that the available evidence leaves no doubt that the Soviet leaders are serious about their civil defense. "Basic to an undertaking of this kind is the belief that major wars may occur in the future. This conviction was probably strongest in Moscow at the time when the Soviet Union did not possess nuclear weapons and had not yet recovered from the weakening effects of World War II. Since then the Soviet leaders have been maintaining more and more emphatically that, with their growing power to deter the West from aggression, the probability of a total war had declined correspondingly yet they are obviously not prepared to rely on this deterrent capability exclusively and under all circumstances. In their view, a danger of war remains as long as East-West struggle continues, even though it may be progressively reduced as Soviet military power grows and the number of Communist countries

increases. Moreover, they cannot be certain that the threat of war will continue to recede, for they are doubtless aware that the stability of any deterrent balance may be considerably affected by technological changes, and depends constantly on the military programs and posture of both sides, on alliance systems, the reliability and safety of retaliatory forces, and many other factors. Thus, despite the current thesis that total war is no longer inevitable, Soviet leaders regard the possibility that it may nevertheless occur as sufficiently great to justify preparing for it. Hence they have made a considerable investment in civil defense." Illustrations. Bibliography. Appended: Outline of the 14-hour Civil Defense Training Course for the Soviet Population 1958-1960; Outline of the 18-hour Training Course for the Soviet Population (1960-1961).

DETERRENCE AND SHELTERS, by J. David Singer, in *Bulletin of the Atomic Scientists*, v.17, no.8 (October 1961) 310-315.

"The actual lifesaving potential of proposed civil defense shelters is far from enough to compensate for the dangers they provoke by inhibiting the serious search for nonmilitary alternatives to international conflict; promoting fatalism about nuclear war; and, because of the time needed to reach metropolitan shelters, suggesting to the USSR that we are contemplating a first strike... It would seem that a civil defense program would enhance neither our deterrent against direct attack nor against nuclear diplomatic blackmail." In this discussion the author deals also with: Soviet Responses to Civil Defense; and Civil Defense in the Soviet Union.

MEDICAL AND CIVIL DEFENSE IN TOTAL WAR, by L. F. Supron and F. P. Zverev. Jerusalem, Israel Program for Scientific Translations, 1961. 406 p. In English.

Translation of the Russian book MEDITSINSKOE OBESPECHENIE NASELENIYA V USLOVIYAKH PRIMENENIYA SREDSTV MASSOVOGO PORAZHENiya, published in Minsk, BSSR, by the Ministry of Health in 1959. Chapter 1: Modern Methods of Air Attack and General Principles of Civil Defense; Chapter 2: The Physical Principles of Atomic Weapons and Their Destructive Properties; Chapter 3: Radiation Sickness; Chapter 4: The Toxicology, Clinical Aspects and Therapy of Affections Caused by War Gases; Chapter 5: Principles of Organization of Civil Defense; Chapter 6: Principles of Organization, Tasks and Structure of the Medical Service of the MPVO; Chapter 7:

Principles of Protection Against Modern Weapons of Mass Destruction; Chapter 8: The Role of the MS MPVO in the Protection from Radiological Damage Caused by Nuclear Weapons. Bibliography follows each chapter. Illustrations.

MILITARY-STRATEGY. Voennaya strategiya, ed. by Marshal V. D. Sokolovskii. Moscow, Voennoe Izdatel'stvo Ministerstva Oborony SSSR, 1962. 456 p. In Russian.

While the work was edited by Marshal Sokolovskiy it was compiled by an impressive list of Soviet General Officers and is perhaps reflective of the current thinking in the Soviet Union as to what constitutes strategy in modern warfare. The book concerns itself mostly with an evaluation of the strategy of the West and the United States, but the compilers also express themselves broadly in many areas of Soviet strategy. Among the subjects covered: strategy and politics; strategy and economics; strategy and the moral-political factor; strategy and military doctrine; the class nature of Soviet military strategy; the contemporary strategy of U.S. and NATO; development of Soviet military strategy 1917-1945; the character of contemporary warfare; determinative factors in the make up of the armed forces, methods of conducting warfare (includes a discussion of the utilization of cosmic space for military purposes); preparing the country to ward off aggression (including civil defense); and directing the armed forces (a discussion of the structure of the higher military echelons in Western armies as well as those of the Soviet Union). Conclusions.

RECENT DEVELOPMENTS IN THE SOVIET CIVIL DEFENSE PROGRAM, by Leon Gouré. Santa Monica, Calif., Rand Corporation, 1963. 26 p. (P-2752.)

The author states that the purpose of this paper is "... to bring my earlier reports up to date, since a considerable body of new information and photographic evidence has become available in the past two years, and to discuss some of the limitations and assumptions of the Soviet civil defense program." Under discussion: organization, training, shelters, urban planning, dispersal and industrial hardening, post-attack rescue, repair and recuperation. The conclusions describe the shortcoming of the Soviet civil defense program.

THE RESOLUTION OF THE SOVIET CONTROVERSY OVER CIVIL DEFENSE, by Leon Gouré. Santa Monica, Calif., Rand Corporation, 1962. 42 p. (Memorandum RM-3223-PR.)

"Describes some recent development in the Soviet civil defense program. It shows the differences between foreign and domestic Soviet propaganda on civil defense, and describes a debate among the Soviet leaders on the value of civil defense—a debate that was resolved at the May 1962 Congress of DOSAAF (the civil volunteer organization). Recent vigorous endorsement of DOSAAF by Party and press may be one indication of impending changes in Soviet domestic and foreign policies."

THE ROLE OF CIVIL DEFENSE IN SOVIET STRATEGY, by Leon Gouré. Santa Monica, Calif., Rand Corporation, 1963. 28 p. (Memorandum RM-3703-PR.)

The memorandum describes, primarily on the basis of recent open Soviet publications and statements on strategy, the Soviet military's views on the role of civil defense in a future war, especially in the light of Soviet concepts of a protracted conflict. "For a number of years Soviet military leaders and writers have publicly declared civil defense to be an integral and important part of Soviet defense capability and a factor in Soviet strategy. Soviet interest in civil defense arises from a concept of war in which the opponent's morale and industrial capabilities are regarded as major targets for strategic attack. The purpose of such attack is to break the enemy's will to resist and to deprive him of the means of continuing the struggle by destroying his capacity to produce new weapons and military equipment. Morale and new defense production, according to the Soviet view, thus become critical factors in determining the outcome of protracted war. The possibility that a general war may become protracted and the need to prepare for such a war have been increasingly stressed in Soviet military literature. In short, Soviet opinion is that the successful outcome of a protracted war depends, among other things, on the uninterrupted functioning of society and the state, including the pursuit and attainment of nuclear superiority over the enemy, during the course of the conflict itself. Civil defense not only helps avoid the breakdowns of morale and social cohesion under the first nuclear blows, but, in connection with a pre-emptive attack and active defense measures, also ensures the preservation of public morale and the continued production of weapons and equipment during subsequent hostilities. Although some Soviet military leaders believe that a general way may be a short one, they appear to have such confidence in the possibility of a long war as to prepare for it at least to the extent that their investment in civil de-

fense program, which has been in effect for over a decade, has placed considerable stress on measures designed to protect industrial and administrative personnel, to ensure the continuity of industrial production under war conditions, and to reduce the shock and casualties among the populations."

SOVIET VIEWS ON CIVIL DEFENSE, by Leon Gouré, in *Current History*, v.41, no.243 (November 1961) 262-266.

"The postwar civil defense program [in Russia] has been in effect over ten years and has been expanded and accelerated since 1955. It is neither a mere paper program nor a crash effort." The author "summarizes Russian plans for civil defense, emphasizing that Soviet military leaders believe civil defense to be an integral part of the Soviet defense posture, contributing directly to the country's readiness for war." The author concludes by stating that "It is difficult to predict the future course of the Soviet activities in civil defense. Since constant efforts are made to expand the system and improve its performance, it may in time become less dependent on early warning. It is significant, however, despite the increasing destructiveness of modern weapons and the inevitable limitations which it imposes on the effectiveness of civil defense, that the Soviet leaders believe the program merits further investment of time and money."

TRANSLATIONS FROM UCHEBNIK DLYA PODGOTOVKI MEDSESTER (NURSES' TRAINING MANUAL) USSR. Washington, Department of Commerce, Office of Technical Services, Joint Publications Research Service, 1962. 131 p. (JPRS 15,952.)

The translation are excerpts from *Uchebnik Dlya Podgotovki Medsester*, by A. G. Safonov.

Moscow, 1962, pages 3-20; 612-634; 645-651; 653-685; 686-711; 712-716. Chapter I: Fundamentals of Soviet Public Health Organization; Chapter X: Protection of the Population against Agents of Mass Destruction; Chapter XI: Organization of Medical Care, Treatment and Nursing Care of Radiation Injuries; Chapter XII: Medical Aid and Nursing Care for War Gas Injuries; Chapter XIII: The Organization and Tactics of the Civil Defense Medical Services. Illustrations.

WHAT'S RUSSIA DOING ABOUT CIVIL DEFENSE, by Leon Gouré, in *Air Force and Space Digest*, v.44, no.8 (August 1961) 38-41.

"The Kremlin has devoted considerable attention to an ambitious civil defense program. Broad in scope, it plays a major role as a component of over-all Soviet strength . . . Russia some years ago set for herself the goal of training the nation's entire population for civil defense. Since 1955, three compulsory training programs for all persons over sixteen years of age have been completed. According to one source, twenty-two million persons, or ten percent of the entire population, now serve in civil defense groups. Russian publications stress a variety of shelters to protect the public, as well as the use of gas masks, protective clothing, and chemical warfare decontamination kits. Present plans call for evacuation of the 'nonessential' city dwellers to rural areas in the event of attack. 'Protective' persons will remain. Extensive postattack and recovery plans also are past the blueprint stage in the truly impressive Red civil defense setup." This present report provides information on: Background; Organization; Training; Shelters, Other Protection; Evacuation; Postattack Operations.

VI. Sources for Reference and Further Study

A. MISCELLANEOUS SOURCES

AN INVENTORY OF SELECTED SOURCE MATERIALS RELEVANT TO INTEGRATION OF PHYSICAL AND SOCIAL EFFECTS OF AIR ATTACK, by Robert D. Popper and William A. Lybrand. Arlington, Va., Human Sciences Research, Inc., 1960. Various paging. (HSR-RR-60/4-SE; AFOSR Technical Note 60-379; ASTIA AD No. 244-888.)

Technical Note on Contract AF 49(638)-549, Project No.9779, Task No.37735, for Behavioral Sciences Division, Air Force Office of Scientific Re-

search, Air Research and Development Command. "The inventory is divided into three major sections . . . Section I: *The Problem*—includes studies or treatises dealing with thermonuclear warfare and its effects. In addition to available information on the nature of the weapon and observed effects in tests and at Hiroshima and Nagasaki, source materials are included which attempt systematic extrapolation from available empirical data of World War II bombing attacks to the nuclear warfare situation. Section II: *Societal Behavior Under Stress*—encompasses studies of World War II bombing attack ef-

fects, the effects of major disasters on societal functioning, and studies of individual and small group reaction to stress. These source materials represent the best basis for extrapolation to the nuclear situation in aspects of the problem not covered by materials in Section I. The studies included are empirical, in that the information or data contained in the study came from actual, real events—with one exception, laboratory studies were excluded. Section III: *Analytical Methods*—Contains reports of analytic approaches used on aspects of the problem, or on similar problems, and a number of applications of analytic models which seem to yield insights into the usefulness of those types of models to the present research program. The studies included are operations research oriented and restricted for the most part to studies which dealt with applied problems of fairly wide scope."

* **OCD INSTRUCTIONS AND MANUALS: DOD ISSUANCES RELATING TO CIVIL DEFENSE. INDEX.** Washington, Office Secretary of the Army, Office of Civil Defense, January 1966. 8 p. (Supersedes July 1965 Index.)

OCD instructions, and manuals, and DOD directives dealing with: Personnel, planning and readiness, supply management, warning, general administration, organization and functions, security, comptrollership, public information, training and education, etc.

* **SOURCE BOOK ON NON-MILITARY DEFENSE, VOLUMES ONE TO SEVEN.** Harmon-on-Hudson, N.Y., Hudson Institute, 1963-1965. 12 pts. (HI-47-RR/1/1; HI-417-RR/2/1; HI-417-RR/3; HI-417-RR/4; HI-417-RR/5; HI-417-RR/6/1; HI-417-RR/7.)

Prepared for the Office of Emergency Planning, Executive Office of the President, under Contract No. OEP-SR-62-30 (Order OCD-OS-62-196); and distribution of this document is limited.—Contents: Volume One—Context, Strategy and Tactics of Civil Defense (2 parts); Volume Two—Technical Components of Civil Defense (3 parts); Volume Three—The Public Response to Civil Defense, by Anthony J. Wiener and Paul C. Berry; Volume Four—Civilian Behavior under Nuclear Stress, by Frederick C. Rockett; Volume Five—Nuclear Attack and the Environment, by Robert U. Ayers. Volume Six—Recovery from Nuclear Attack (4 parts); Volume Seven—A Survey of Foreign Civil Defense, by Elisabeth T. Crawford.

B. BIBLIOGRAPHIC SOURCES

1. *Miscellaneous Bibliographies*

[BIBLIOGRAPHY], in: **A STUDY OF PERSONNEL DEMANDS AND AVAILABILITIES FOR POSTATTACK COUNTERMEASURE SYSTEMS**, by William W. Pendleton. McLean, Va., Human Sciences Research, Inc., 1966. pp.xiii-xvii. (HSR-RR-66/11-Mh.)

[BIBLIOGRAPHY], in: **CIVIL DEFENSE IMPLICATIONS OF CURRENT AND FUTURE URBAN CONFIGURATIONS**, by H. R. Woltman and E. C. Goodrow. Los Angeles, Calif., Planning Research Corporation, 1963. pp.289-343. (Contract No.OCD-OS-62-278.)

This bibliography is organized by subject under the following headings: cities-general; city planning; city forms; urban redevelopment; regional analysis; population; leisure; working women; marketing; transportation; aviation; social and ethnic aspects; housing; building construction, shelters, etc.; civil defense; fire effects; projections and forecasts; statistical sources.

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Books and pamphlets; newspaper and magazine articles; Civil Defense Public Information pamphlets.

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[BIBLIOGRAPHY], in: **RESPONSE OF POPULATION TO OPTIMUM WARNING SIGNAL**, by Herbert J. Ayer and Edward J. Hardick. East Lansing, Mich., Michigan State University, 1963. pp.63-64. (SHSLR163.)

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* [BIBLIOGRAPHY OF MATERIALS AND REFERENCES CITED], in: **NONMILITARY DEFENSE FOR THE UNITED STATES: STRATEGIC, OPERATIONAL, LEGAL AND CONSTITUTIONAL ASPECTS**, by William K. Chipman. Madison, Wis., University of Wisconsin, National Security Studies Group, 1961. pp.367-396.

Decisions of the United States Supreme Court; Decisions of the Lower Federal Courts; Decisions of State Courts; Statutes; Opinions of the Attorney General of the United States; Congressional Record; Materials Published by the Congress of the United States; Books and Treatises; Law Review Articles; Articles from Periodicals Other Than Law Reviews; Publications of the Office of Civil and Defense Mobilization (OCDM) and of the Federal Civil Defense Administration (FCDA); Publications of the U.S. Department of the Army; Pamphlets, Studies and Reports Published by Agencies of the United States Government Other Than OCDM, FCDA, and the Department of the Army; Non-Governmental Pamphlets, Studies and Reports; Newspaper Reports and Columns; Addresses and Interviews; British Materials on Civil Defence and Defence Mobilization.

BIBLIOGRAPHY: REPORTS RELATED TO CIVIL AND NONMILITARY DEFENSE AT SRI, by Kendall D. Moll. Menlo Park, Calif., Stanford Research Institute, 1963. 48 p. (SRI-sponsored Project No.244-521.)

"This memorandum report is an expansion and revision of a bibliography prepared in June 1959. It has been republished so that a relatively complete, up-to-date list of Institute projects related to civil and nonmilitary defense may be available . . . About one-half of the listed reports were prepared under contracts sponsored by the Office of Civil Defense, the Office of Emergency Planning, and their predecessor agencies."

CIVIL DEFENSE AGAINST NUCLEAR ATTACK; A SELECTED BIBLIOGRAPHY, in *Bulletin of the Atomic Scientists*, v.18, no.7 (September 1962) 33-34.

This selected bibliography is divided into the following two parts: Technical Aspects of Civil Defense Against Nuclear Attack; and Nontechnical Aspects of Civil Defense—The Desirability of a Civil

Defense Program.

* **CIVIL DEFENSE BIBLIOGRAPHY**. McLean, Virginia. Human Sciences Research, Inc., January 1966. 74 p.

A compilation of references relevant to the study of societal recovery from nuclear attack. "The bibliography is reproduced in the form of an accessions list and has no meaningful internal order." All items listed are located in HSR library.

* **CIVIL DEFENSE; OTS SELECTIVE BIBLIOGRAPHY**. Washington, United States Department of Commerce, Office of Technical Services, 1962. 11 p. (SB-501.)

This is a bibliography of reports listed in two OTS semi-monthly abstract journals: U.S. Government Research Reports and Technical Translations.

DEFENSE ANALYSIS CENTER BIBLIOGRAPHY AND ABSTRACTS, by Ellen L. Heckler. Menlo Park, Calif., Stanford Research Institute, 1963. Various paging.

This document describes the major projects on which the Defense Analysis Center has worked, lists reports that have been prepared, and describes briefly the contents of selected reports (summary reports, technical reports, research memoranda, and working papers). Following are some of the subjects covered: NATO Air Defense; Arms Control; Threat; Ballistic Missile and Satellite Defense; Strategic Studies; etc.

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[REFERENCES AND SELECTED READING], in: **STRATEGY FOR SURVIVAL**, by Thomas L. Martin, Jr. and Donald C. Latham. Tucson, Ariz., The University of Arizona Press, 1963. pp.361-376.

This selected reading list "covers most phases of the civil defense problem. There are references here for the private citizen, engineer, physician, city or county planner, dietitian, mayor, or psychologist."

[SELECTED TECHNICAL BIBLIOGRAPHY], in: **SURVIVAL HANDBOOK**, by Robert Suggs. New York, the Macmillan Co., 1962. pp. 230-233.

* **SOURCES OF REFERENCE AND GUIDANCE**, by Paul Stuber, in *Industrial Security*, v.6,

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2. *Arms Control and Disarmament*

[BIBLIOGRAPHY], in: DOCUMENTS ON DISARMAMENT 1965. Washington, United States Arms Control and Disarmament Agency, 1966. pp.671-674.

DOCUMENTS ON DISARMAMENT 1965. Washington, United States Arms Control and Disarmament Agency, 1966. 710 p.

Contains basic documents on disarmament, arms control and related matters (e.g. atomic radiation, nuclear weapons, etc.). Bibliography.

U.S. SECURITY, ARMS CONTROL, AND DISARMAMENT, by Harry Moskowitz and Jack Roberts. Washington, Deputy Assistant Secretary of Defense for Arms Control, 1961. 144 p.

A bibliographic survey of literature including articles, books, studies, etc. on the subject of American security and the problems of arms control and disarmament. Each entry is provided with a substantial abstract, and all are classified according to the following subject-matter scheme: National Security, Arms Control, and Strategy; War and Weapons of Mass Destruction, Disarmament and International Security; and Reference Sources. Also appended are materials to aid the researcher and student of this subject field. This bibliography is a companion to another one compiled by the same authors: Disarmament—A Bibliographic Record, 1916-1960, prepared for the Office, Special Assistant to the Joint Chiefs of Staff for Disarmament Affairs, 15 May 1960.

3. *Civil Defense Organization*

[BIBLIOGRAPHY], in: A SYSTEMS ANALYSIS OF CIVIL DEFENSE ORGANIZATION AT THE REGIONAL, STATE, AND LOCAL LEVELS. INITIAL REPORT: SYSTEM DEFINITION AND PROBLEM IDENTIFICATION, by Arthur A. McGee and Richard C. Katz. Menlo Park, Calif., Stanford Research Institute, 1965. pp.85-90. (SRI Project MU-4949-410 MU-4536-432.)

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[REFERENCES AND BIBLIOGRAPHY], in: SHELTER OCCUPANCY STUDIES AT THE UNIVERSITY OF GEORGIA—FINAL REPORT, by John A. Mammes and others. Athens, Ga., University of Georgia, Civil Defense Research, 1964. pp.97-107.

A SELECTIVE BIBLIOGRAPHY ON EN- VIRONMENTAL CONTROL AND HABITA- BILITY OF SURVIVAL SHELTERS, by E. R. Kaiser and J. Tolciz. New York, New York Uni- versity, College of Engineering, 1962. 44 p.

Prepared for the American Society of Heating, Refrigerating and Air-Conditioning Engineers New York, and presented on 26 June 1962 at the Survival Shelters Symposium 96th Annual Meeting of the Society. "The annotated bibliography of 198 refer- ences was prepared to aid air-conditioning engineers and others in finding authoritative information on environmental engineering of fallout, protective and survival shelters. . . The report and papers cited are

listed in 8 categories with cross references." See also: A Selective Bibliography on Environmental Control and Habitability of Survival of Shelters—Addendum No.1, by E. R. Kaiser, 31 May 1963, 33 p.

8. *Sociological Aspects*

[BIBLIOGRAPHY], in: LAW AND ORDER IN CIVIL DEFENSE; SOME ASPECTS OF CIVIL AND MILITARY PROGRAMS FOR THE MAINTENANCE OF LAW AND ORDER IN A CIVIL DEFENSE EMERGENCY, by Frank Cohn. East Lansing, Michigan State University, School of Police Administration and Public Safety, 1963. pp.368-381. (Unpublished M.S. Thesis.)

[BIBLIOGRAPHY], in: TRAINING REQUIREMENTS FOR POSTATTACK ADAPTIVE BEHAVIOR: FINAL REPORT. Darien, Connecticut, Dunlap and Associates, 1965. pp.87-92.

[REFERENCES], in: SOCIAL PHENOMENA IN A POST-NUCLEAR ATTACK SITUATION: SYNOPSES OF LIKELY SOCIAL EFFECTS OF THE PHYSICAL DAMAGE, by Peter G. Nordlie and Robert D. Popper. Arlington, Va., Human Sciences Research, Inc., 1961. pp. R-1 to R-4. (HSR-RR-61/2-Se; AFOSR Technical Note 60-1495; ASTIA AD No.263-211.)

C. DIRECTORIES

DIRECTORY OF FIRE RESEARCH IN THE UNITED STATES. REVISED 1963. Washington, National Academy of Sciences, National Research Council, 1964. 213 p. (Publication 1189.)

"The Directory is arranged in five sections: Government Agencies, Private and Industrial Laboratories, State Universities, Private Universities and Associations. Projects are described under the laboratory where the work is performed. In general, the associations sponsor rather than perform research. Their interests are described. An alphabetical list of sponsors, showing the projects sponsored by them, is appended. Another list describes 'in-house' research paid for by the laboratory that performs the research. The index is compiled by title of projects according to areas of scientific interest."

* NATIONAL DIRECTORY OF QUALIFIED FALLOUT SHELTER ANALYSTS. Washington, Department of Defense, Office of Civil Defense, July 1966 319 p. (FG-F-1.2.)

Supersedes FG-F-1.2, July 1965. This National Directory of Fallout Shelter Analysts contains a

listing of individuals who, as a minimum requirement, have successfully completed a course in Fallout Shelter Analysis and have been certified as of May 1, 1966. The listing is arranged alphabetically. The directory also includes a listing for each of the eight Civil Defense regions arranged alphabetically by States. Each State is subdivided into the two following sections: (1) Fallout Shelter Analysts who are registered professional architects and/or engineers; (2) Fallout Shelter Analysts who are not registered.

D. GLOSSARIES

Towler, Juby E. CIVIL DEFENSE DICTIONARY: WORDS, PHRASES, LETTERS. Danville, Va., Office of Civil Defense, 1966. 124 p.

A dictionary of terminology generated by the American civil defense program. Slightly longer explanations are given for technical terms. The volume is intended to be "particularly useful to the news media, Civil Defense personnel, and the volunteer workers." (Extracted from: Arms Control & Disarmament, v.3, no.1.)

TRILINGUAL GLOSSARY OF STRATEGIC TERMINOLOGY, comp. and ed. by László Hadik. Geneva, Institut Universitaire de Hautes Etudes Internationales, 1964. 141 p.

The author compiled and edited this draft copy of the glossary while he was on loan for one year from The Institute of Defense Analyses to the Graduate Institute of International Studies. Louis J. Halle, of The Institute, writes in the introduction that this trilingual glossary (In English, French, and German) includes some definitions which were taken as found in various works, and others which were composed on the basis of what was believed to be the commonest usage. Examples of some of the words and phrases defined are: nuclear plenty, surprise attack, arms race, credibility, overkill capability, deterrence, first strike, preventive war, nuclear parity, general and complete disarmament, among many others. Also included are: a short bibliography, an alphabetic table of French terms, and an alphabetic table of German terms. It is contemplated that sometime in the future a revised and enlarged edition will be published as a successor to this draft copy.

E. HANDBOOKS

COMMUNITY INVOLVEMENT IN CIVIL DEFENSE: SUGGESTION BY THE AMERI-

CAN NATIONAL RED CROSS. Washington, Government Printing Office, May 1965. 41 p. (H-11-A.)

"This guidebook was prepared by the Disaster Service of the American National Red Cross for the Office of Civil Defense in order to share with Civil Defense Directors its many years of valuable experience in working with community resources to meet the needs of the communities in emergency . . . The principles and recommendations in this guide can . . . be used in both rural and urban areas and can be adapted to the existing municipal and county government structures of which Civil Defense is a part . . ."

DISASTER HANDBOOK, by Solomon Garb and Evelyn Eng. New York, Springer Publishing Co., 1964. 248 p.

"This book has been planned primarily for doctors and nurses . . . [and also for] others interested in disaster casualty prevention and disaster management . . ." Contents: Basic Features of Disasters; Nursing in Disasters; Major Types of Disaster; and Thermonuclear Disaster. With chapter bibliographies.

A GUIDE FOR THE TRAINING OF FOOD MANAGERS OF LICENSED FALLOUT SHELTERS, by Jack C. Levy and others. Ithaca, N.Y., Cornell University, The School of Hotel Administration, 1963. 61 p.

Contract No. OCD-OS-62-49. "This publication has been prepared to deal with that phase of the administration of the large public or semi-public shelters which has to do with the management of the water and food problems. It is designed to serve as a guide for those responsible for planning, organizing and maintaining the facilities and the voluntary forces that will be needed for the shelters and the post-shelter functions. It describes the purposes, activities and responsibilities of the food manager and suggests policies, organizational patterns, and administrative practices that will be helpful to him in attaining his difficult goals."

GUIDE TO CIVIL DEFENSE MANAGEMENT IN THE FOOD INDUSTRY. Washington, Department of Agriculture, Agricultural Marketing Service, 1963. 32 p. (Agriculture Handbook No. 2541.)

"This guide is designed to encourage and assist the food plant operator in carrying out those survival preparations which are essential to his own welfare, his community's and the Nation's." Part I: Orientation to Civil Defense Planning in the Food Industry; Part II: Civil Defense Preparations in the Food

Industry; Part III: Industry-Government Cooperation for Community Survival; Part IV: Operations During Survival Period. Appended: Industry defense checklist; references.

GUIDE TO SHELTER ORGANIZATION AND MANAGEMENT, by Emil Bend and others. Pittsburgh, Pa., American Institute for Research, 1963. 430 p. (AIR-C-99-9/63-TR.)

Prepared for the Office of Civil Defense under Contract No. OCD-OS-62-164. "This report is the result of a Project whose goal was to develop guidance materials pertaining to shelter organization and management, and to present these materials in a form that would make them maximally useful to civil defense personnel and others interested in the subject of shelter management . . . The multi-purpose nature of the Guide . . . is the final factor whose impact upon the guidance materials must be mentioned. The Guide is designed to serve as (1) a reference work, (2) a training aid, and (3) an aid to shelter managers in the event of a nuclear emergency." Included are: Appendix A, "A Checklist of Management Responsibilities," and Appendix B, "A Review of Shelter Requirements." The former is "a temporally ordered list of basic steps in organizing and operating a shelter. The latter is a brief review of the scope of the shelter manager's responsibilities that, in an emergency, can serve as an introduction to the Guide . . ."

SURVIVAL HANDBOOK, by Robert C. Suggs. New York, the Macmillan Co., 1962. 233 p.

"Our national Civil Defense program has had to fight against a tide of misinformation, inertia, lack of interest, and propaganda to achieve what progress has been made . . . One major reason for writing this book . . . [was] to contribute . . . to the dissemination of knowledge on the question of civil defense." The author covers a wide range of topics, all of which are pertinent to civil defense. "The physical bases for nuclear reactions provide a background for discussion of nuclear weapons and their effects. This is followed by sections on nuclear radiation and the hazard it poses for life, and possible shelter constructions against such radiation. Finally, the problems of shelter living are taken up." With: glossary, and selected technical bibliography.

F. INDEXES AND CATALOGS

CIVIL DEFENSE MOTION PICTURE CATALOG. Washington, Department of Defense, Office

Civil Defense, September 1966. 38 p. (MP-6. Supersedes MP-6 Dated May 1965.)

This catalog includes only current and official OCD motion pictures produced by the OCD Audio-Visual Division or by independent sponsors in cooperation with OCD. Contents: To request motion pictures; conditions of use; to purchase prints of OCD films; theatrical trailers; films available on matching funds; current motion pictures; motion pictures of interest, sponsored by other U.S. Government agencies; obsolete motion pictures; addresses of the major army audio-visual support centers by state and U.S. territories.

U.S. Office of Civil Defense. FEDERAL CIVIL DEFENSE GUIDE: A SPECIAL PRINTING OF ALL FEDERAL CIVIL DEFENSE GUIDE ITEMS AVAILABLE AS OF 15 FEBRUARY 1965 [Washington, U.S. Govt. Print. Off.] 1965. 1 v. (various pagings)

Sets forth U.S. civil defense programs and policies and "recommended State and local action to assist officials at all levels of government in programming for, and accomplishing . . . civil defense preparedness measures. Revised pages, chapters, appendices, and annexes may be issued from time to time." (Extracted from: Arms Control & Disarmament, v.1, no.4.)

PUBLICATIONS INDEX. Washington, Department of Defense, Office of Civil Defense, January 1967. 30 p. (MP-20. Supersedes MP-20, July 1966.)

Partial contents: general information on CD publications; availability of CD publications; list of State CD officials; Federal CD guide; training publications; informational publications; industrial CD publications; publications on rural Civil Defense. Publications superseded or withdrawn since July 1966.

• **REPORTS RELATED TO CIVIL AND NON-MILITARY DEFENSE AT SRI**, by Kendall D. Moll. Menlo Park, California, Stanford Research Institute, 1963. 48 p. (SRI-Sponsored Project No. 244-521.)

List of Institute's projects related to civil and nonmilitary defense. About one-half of the listed reports were prepared under contracts sponsored by the Office of Civil Defense, the Office of Emergency Planning, and their predecessor agencies.

G. MANUALS

CIVIL DEFENSE MANUAL FOR RADIO-

LOGICAL DECONTAMINATION OF MUNICIPALITIES, by C. Herbert Wheeler, Jr. and Mario V. Cammarano. Caldwell, N.J., Curtiss-Wright Corp. Curtiss Division, Environmental Systems, 1963. Various paging.

Prepared for Office of Civil Defense, Department of Defense, Contract No. OCD-OS-62-279, OCD Sub-Task No.3236A.—"Radiological defense consists primarily of protection from fallout. This manual covers the Operational Recovery Phase of radiological defense, which is concerned with decontamination of structures and areas made dangerous or lethal by fallout. It assumes that no significant damage has been sustained in the area due to blast or fire. The purpose of the manual is to furnish information and planning techniques which will enable Civil Defense Planners to formulate and implement plans of action for Operational Recovery from nuclear attack in areas subject to radioactive fallout. The manual is written for Municipal Planners and Engineers, and for special groups, such as equipment operators and medical doctors, to whom individual chapters will be of particular value and interest."

A DISASTER PLANNING MANUAL FOR SMALL COMMUNITIES, by D. B. Haswell and others. Cambridge, Mass., Bio-Dynamics, Inc., 1965. 148 p.

Contract No. OCD-PS-64-39, OCD Work Unit 2522C. "This manual was prepared as part of the study of community fire-fighting capabilities. It describes a method and organization by which existing municipal services (fire, police, public works, medical, civil defense, etc.) can be integrated for an expanded capability to contend with major fires and associated contingencies. The majority of the recommendations are based on methods used successfully in the development of municipal disaster organizations. The manual is representative of a type that might be used by fire chiefs—personnel at the operating level . . . The essential ingredient for success is having professional, experienced personnel in control positions and a clear definition of the organization. The manual carries planning for fire operations, including access, emergency resources, communications, logistics, and other vital tasks required for damage control."

• **EMERGENCY SOCIAL SERVICES**. Washington, Department of Civil Defense, 1965. 25 p. (Emergency Welfare Services Manual FG-E-13.2.)

"This manual . . . is one of a series of guidance

documents prepared by the Bureau of Family Services and the Children's Bureau of the Welfare Administration, U.S. Department of Health, Education, and Welfare, for the Office of Civil Defense. . . . The purpose of the documents is to assist State and local public welfare (DPW) and civil defense (CD) officials in planning, organizing, and—if need arises—operating their Emergency Welfare Services (EWS) programs in the event of threatened or actual nuclear attack." Contents: The Need; Staffing and Responsibilities; Early Postattack Operations; Emergency Financial Assistance; Care and Protection of Children; Care of the Aged and Handicapped; Welfare Institutions; Recovery Needs.

HOW TO SURVIVE IN AN ATOMIC ATTACK; AN INSTRUCTION MANUAL ON WAYS CIVILIANS CAN HELP THEMSELVES AND OTHERS, by Tamar E. Dufwa. New York, Exposition Press, 1963. 39 p.

Nuclear explosions and survival; shelters; life in a shelter; what a civilian can do to help in rehabilitation; making the patient comfortable . . . ; basic foods and their modification for patients; emergency nursing. Illustrated.

A MANUAL FOR THE MANAGEMENT OF FOODS IN LICENSED FALLOUT SHELTERS, by Jack C. Levy and others. Ithaca, N.Y., Cornell University, School of Hotel Administration, 1963. 83 p. (Contract No. OCD-OS-62-49.)

"The manual outlines the purposes, responsibilities and functions of the food manager working under the overall supervision of a general manager. The policies, principles and purposes presented, as well as specific operational details, should prove of value to the newly appointed food manager." References.

NUCLEAR SURVIVAL MANUAL. BOSDEC—THE CONCRETE CURTAIN, by James R. Fairlamb. Butler, N.J., Drexel Winslow and Farrington, 1963. 187 p.

Chapter 1: Surviving Immediate Effects of a Nuclear Explosion; Chapter 2: Types of Nuclear Weapon Explosions; Chapter 3: Thermal Radiation; Chapter 4: Nuclear Blast; Chapter 5: Nuclear Radiation Guide; Chapter 6: Nuclear Radiation Protection Shields; Chapter 7: Nuclear Explosion Survival Range; Chapter 8: Shelter Building Controversy; Chapter 9: Getting to the Shelter; Chapter 10: Nuclear Attack Possibilities; Chapter 11: Essential for Survival; Chapter 12: BOSDEC (Bomb Shelter in Depth Concept); Chapter 13: How to Meet BODSEC

Specifications; Chapter 14: General Food Information; Chapter 15: Primary Shelter Menus; Chapter 16: Shelter Equipment and Supplies; Chapter 17: General Radiation Information; Chapter 18: Emergency Shelter First Aid; Chapter 19: Basic Nuclear Physics; Chapter 20: America After a Nuclear Attack. Glossary. Bibliography.

ORIENTATION MANUAL ON DISASTER PREPAREDNESS FOR PHARMACISTS. Washington, U.S. Department of Health, Education, and Welfare, Public Health Service, 1965. 26 p. Contract No. OCD-PS-63-65; Subtask 2421D.

"This manual is based on *The Role of the Pharmacist in National Disaster*, prepared by the American Pharmaceutical Association's Committee on Disaster and National Security in Cooperation with the Division of Health, Mobilization, Public Health Service, Department of Health, Education, and Welfare. It further serves as a guide for the pharmacist in his area of responsibility for disaster preparedness. This includes an explanation of existing governmental and non-governmental programs concerning disaster preparedness services and offers direction for motivating pharmacists towards community preparedness. Appropriate reference sources are listed."

A PROTOTYPE MANUAL FOR PLANNING, ANALYZING AND SCHEDULING FOR RADIOLOGICAL EXPOSURE, by V. M. Cammarano. Caldwell, N.J., Curtiss-Wright Corporation, 1964. Unpaged.

Contract No. OCD-OS-62-279. OCD Sub-Task No.3236A. "This report is prepared to acquaint the reader with a planning strategy designed for use during the Post-Attack phase of a nuclear attack. The report also presents the planning assumptions and techniques specifically expressed in the Second Edition of 'A Prototype Civil Defense Manual for Radiological Decontamination of Municipalities' prepared for the Office of Civil Defense under Contract Number OCD-OS-62-279. Included is a description of the post-attack picture, and a discussion of the characteristics of the radiation field with respect to time after detonation and distance from ground zero. The mathematical basis for, and operation of a *Dose Accumulation Analyzer*, developed by the author are presented. The Analyzer is designed to yield fast, accurate information on the probable dose accumulation in personnel resulting from any desired exposure schedule. Data concerning area entry time, minimum shelter stay time, and decontamination feasibility, for any combination of Standard Dose Rate and

Residual Number, Effective Fallout Arrival Time and any Allowed Dose criterion can easily be obtained from the Analyzer." [Dose Accumulation Analyzer may be located in a pocket inside back cover.]

H. SOME STATISTICAL DATA (See Also Appendixes C and G)

ANNUAL REPORT OF THE OFFICE OF CIVIL DEFENSE FOR FISCAL YEAR 1966. Washington, Government Printing Office, 1967. 134 p.

Part I: Summary Statement; Part II: Program Structure and Support; Part III: Nationwide Fallout Shelter System; Part IV: Complementary Civil Defense Systems; Part V: Federal Assistance Programs and Activities; Part VI: Research; Part VII: Supporting Activities. Appendixes; illustrations; tables.

ANNUAL STATISTICAL REPORT, FISCAL YEAR 1961. Battle Creek, Mich., Office of Civil and Defense Mobilization, 1961. 223 p.

"This is the third and last Annual Statistical Report of the Office of Civil and Defense Mobilization. On July 20, 1961, the President issued Executive Order 10952 assigning major civil defense responsibilities to the Secretary of Defense and redefining the role of the Director of the Office of Civil and Defense Mobilization. This order became effective on August 1, 1961. Later the Office of Civil and Defense Mobilization was reconstituted as the Office of Emergency Planning, in the Executive Office of the President. This report presents, in summary form, data on the progress made in programs carried on by the OCDM during fiscal year 1961." Contents: Continuity of Government; Progress of Federal Agencies; Public Information and Education; Reduction of Vulnerability; Warning of Attack; Communications; Chemical, Biological and Radiological Defense; Stockpiling—Strategic and Critical Materials; Stockpiling—Civil Defense; Manpower Resources; Investigation of Imports; Research and Development; Training and Education; Federal Assistance; Natural Disasters; Civil Defense Financing; Tests and Exercises; and Maintenance of the National Plan.

DEVELOPMENT OF "TYPICAL" URBAN AREAS AND ASSOCIATED CASUALTY CURVES, by L. Wayne Davis and others. Albuquerque, N.M., The Dikewood Corp., 1965. 192 p. (DC-FR-1041.)

Prepared for Office of Civil Defense, Office of the Secretary of the Army, Final Report on Contract No. OCD-PS-64-47.—"The development of 'typical' urban areas (determined by the land use and the types of building construction) and the associated casualty curves is the subject of this contractual effort." Partial contents: Selection of Urban Areas; Selection of Urban Blocks; Data Recorded; Computer Summaries for Large Areas; Statistical Analysis of the Building-Construction Summaries; Population Percentage Outside Structures; Casualty Curves; etc. With references, tables, and illustrations.

* HIGHLIGHTS OF FISCAL YEAR 1965 BUDGET ESTIMATE. Washington, Department of Defense, Office of Civil Defense, 1964. 24 p.

"The projected FY 1965 budget of \$358 million for the Office of Civil Defense reflects the action of the . . . Administration to continue a firm priority for a fallout oriented civil defense program. The decision was made by the President, upon the recommendation of the Secretary of Defense, that the FY 1965 defense budget would carry an increase for civil defense of \$246.4 million over FY 1964, in the face of intensive and successful efforts to reduce the total defense budget. This decision resulted from the conclusion of all in the Pentagon who have studied the problem that military programs designed to limit damage in the United States would perform more effectively in association with a nationwide fallout shelter system and civil defense organization and, furthermore, that the lifesaving potential of the projected civil defense program is very much greater than a comparable expenditure on military weapons systems." In discussing the budget in depth, the following areas are considered: warning and detection; emergency operations; financial assistance to States; management; shelters; and research and development. With statistical charts.

SELECTED STATISTICS ON THE FALLOUT SHELTER PROGRAM. Washington, Department of Defense, Office of Civil Defense, 25 March 1967. 45 p. (OCD Statistical Report 7720.53.)

"This is a monthly progress report on the Fallout Shelter Program. Its purpose is to bring together various available data into a meaningful summary. Data herein are selected from statistics currently available through implementation of the Fallout Shelter Reporting System. Major segments of data are drawn from reports prepared by the Defense

General Supply Center, which is the inventory control point for shelter provisions, and by the National Civil Defense Computer Facility and the Bureau of Census, which are focal points for data on shelters

located, licensed and marked . . ." Section I: Civil Defense Progress; Section II: Shelter Program Status; Section III: County and City Status. [For statistical tables see Appendix.]

APPENDIXES

- A. Development of Civil Defense in the United States (A Chronological Summary to 1962)
- B. Fallout Shelter Located, Licensed, and Stocked, Fiscal Year (FY) 1966
- C. OCD Appropriations
- D. Department of the Army, Office of the Secretary of the Army, Office of Civil Defense (Organizational Chart)
- E. Department of the Army, Office of the Secretary of the Army, Office of Civil Defense, Regional Boundaries and Field Installations (MAP)
- F. State Civil Defense Officials January 1967
- G. Statistical Summary, April 1, 1967

APPENDIX A

DEVELOPMENT OF CIVIL DEFENSE IN THE UNITED STATES

(A Chronological Summary)

In August 1916, Congress established the Council of National Defense to coordinate "Industries and resources for the national security and welfare" and to create "relations which will render possible in time of need the immediate concentration and utilization of the resources of the Nation." The Council consisted of the Secretaries of War, Navy, Interior, Agriculture, Commerce, and Labor.

In April 1917, a State Council Section was established in all States by the respective Governors, and in the same month, the Council of National Defense established a Women's Committee to coordinate and stimulate wartime activities of the Nation's women.

A Field Division was established by the Council in October 1918 to merge the work of the State Council Section and the Women's Committee. The merger was short-lived because the 1918 Armistice brought rapid dissolution of State and local defense councils.

In December 1918, the Council of National Defense adopted a resolution, in response to a request by the United States Employment Service, asking State and local defense councils to keep their organizations intact to assist Federal agencies in meeting postwar adjustments.

Between November 1918 and mid-May of 1940 civil defense did not exist in the United States but legislation passed during World War I provided a foundation for the program adopted in 1951.

On May 28, 1940, the President announced the reestablishment of the Advisory Commission to the Council of National Defense (termed the National Defense Advisory Commission). The Government's defense actions in 1940 were limited to the establishment of partial administrative machinery for partial industrial mobilization. Nevertheless, the Defense Advisory Commission and its subsidiary organizations contained a nucleus for many of the beginnings of the agencies which were more fully developed later. Among these organizations was the Commission's Division of State and Local Cooperation, which became the basis for the Office of Civilian Defense.

Executive Order No. 8757, dated May 20, 1941, replaced the Division of State and Local Cooperation with the Office of Civilian Defense (OCD). This new office was headed by Mayor Fiorello La Guardia of New York City, who served as Director on a volunteer basis, receiving no salary and operating directly under the President. In July 1941, OCD established regional offices at Boston, New York, Baltimore, Atlanta, Cleveland, Chicago, Omaha, San Antonio, and San Francisco. In the same month, a Civilian Protection Branch and a Plant Protection Branch were established at OCD headquarters. The Civilian Protection Branch was responsible for plans and policies concerning organization and operation of warning services; protective services such as warden, fire, police, and rescue; decontamination; blackout; communications; supply; shelter; medical; and other essential services. The Plant Protection Branch was responsible for protective measures, including antisabotage, in industrial plants and key facilities.

On December 8, 1941, Director La Guardia announced the establishment of the Civil Air Patrol (CAP) under OCD. In April 1943, CAP was transferred from OCD to the War Department and operated as an auxiliary of the Army Air Force.

In January 1942, the first schools for training in emergency civil defense duties of regular and auxiliary police were opened in 46 cities by the FBI in cooperation with OCD. A special ten-day course for 150 Reserve and National Guard Officers assigned to regional and State civil defense offices was conducted by the Army Chemical Warfare and OCD personnel at Edgewood Arsenal, Maryland.

Mayor La Guardia resigned in February 1942 and Mr. Dean Landis was appointed Director of OCD. Executive Order No. 9134, was issued April 1942, to replace the Board of Civilian Protection and the Volunteer Participation Committee by a single Civilian Defense Board, consisting of the Secretary of War, the Attorney General, the Secretary of the Navy, and the Director of the Office of Defense, Health and Welfare Services, to advise and assist the OCD Director.

On May 19, 1942, Executive Order 9165 was issued, placing responsibility for the facility security program upon OCD.

OCD remained under the direction of Mr. Dean Landis until his resignation in September 1943. Mr. John B. Martin served as Acting Director until the appointment in February 1944 of Lt. Gen. William N. Haskell as Director. During the next 15 months, OCD's activities were gradually curtailed and the agency was abolished on June 30, 1945, by Executive Order No. 9562, dated June 4, 1945.

On November 26, 1946, (War Department Memorandum 400-55) the Secretary of War established the War Department Civil Defense Board under the direction of Major General Harold R. Bull, to study the problem of civil defense. This group became known as the "Bull Board," and was responsible for formulating War Department views and policies in connection with civil defense. The Board submitted its report to the Secretary of Defense in February 1948, and its basic conclusions were:

1. There is a definite need for civil defense. "Civil defense is an essential part of national defense."
2. "Civil defense in the United States as organized and directed in World War II would be inadequate for the future."
3. A single Civil Defense Agency should be established.
4. Adequate authority for a civil defense organization requires legislation.
5. Planning at the national and State levels should begin immediately.
6. "Some agency should be designated to initiate coordinated planning pending final decision on civil defense responsibilities. Of the existing Federal agencies, the War Department is best suited immediately to undertake this responsibility."

On July 26, 1947, Public Law 253 (Unification Act) was approved; the Law established the National Security Resources Board.

In February 1948, the Report of the War Department Civil Defense Board (Bull Board Report), was released.

On March 27, 1948, the Secretary of Defense established the Office of Civil Defense Planning and named as its director Major General Russell J. Hopley. General Hopley was ordered to prepare, and to submit to the Secretary of Defense, a program of civil defense for the United States. The plan was to include a permanent federal civil defense agency which, in conjunction with the several States and their respective subdivisions, could undertake those peacetime preparations which are necessary to assure an adequate civil defense system in event of war.

After six months of study, the Office of Civil Defense Planning submitted to the Secretary of Defense a report entitled Civil Defense for National Security, dated October 1, 1948. This report, referred to as the "Hopley Report," proposed a comprehensive civil defense program encompassing Federal (including regional), State, local, and metropolitan area organizations.

On March 3, 1949, the President assigned primary responsibility for civil defense planning to the National Security Resources Board. The Board was requested to consult with other Government agencies and with representatives of State and local government in developing civil defense plans, and to submit its recommendations.

Perhaps one of the most important steps taken in civil defense planning was the issuance by the NSRB of a handbook, "Survival Under Atomic Attack." More than 250,000 copies of this booklet were issued and excerpts and reprints were widely distributed by newspapers and private publishers.

On June 3, 1949, the Acting Chairman, National Security Resources Board: (a) Requested the Administrator, General Services Administration (then Federal Works Agency), to assume responsibility for "Wartime civil disaster relief planning." Assignment embraced activities and supplies, rescue, evacuation, demolition, regulation of transportation, communications, and restoration of order; (b) Requested that the Department of Defense assume responsibility for planning civilian participation in active defense. The assignment included detection, observation, and identification of aircraft, air-raid-warning systems, border patrol, antiaircraft defenses, civil air patrol, camouflage, and protective construction.

The General Services Administration submitted a planning prospectus to the Acting chairman of the National Security Resources Board on August 23, 1949.

In September 1949, the Department of Defense held "Operation Lookout" to test air defense of 10 northeastern States and on September 23, 1949, President Truman announced that an atomic explosion had occurred in the Soviet Union.

On October 5, 1949, the NSRB Acting Chairman transmitted to the Governors of the States and Territories a statement of policies for relations with State and local governments.

On October 24, 1949, Senator Brian McMahon, Chairman of the Joint Committee on Atomic Energy, announced that public hearings on the problem of civil defense would be held early during the next session of Congress.

On December 1, 1949, the first of a series of NSRB Civil Defense Planning Advisory Bulletins was published outlining the Federal Government's objectives in planning. It set forth information on the planning activities then in progress, made recommendations for State and local action, and requested information on specific questions relating to State civil defense programs.

On September 18, 1950, President Truman sent the NSRB's "United States civil defense plan" to Congress for consideration, and H.R. 9686 was introduced in the House of Representatives.

On December 1, 1950, Executive Order 10186 created the Federal Civil Defense Administration within the Office of Emergency Management, Executive Office of the President, and Mr. Millard Caldwell was appointed Administrator. On December 16, 1950, Executive Order 10193 was issued, establishing the Office of Defense Mobilization, also within the Executive Office of the President. On January 12, 1951, President Truman signed into law the bill known as the "Federal Civil Defense Act of 1950" (Public Law 920, 81st Congress).

Civil defense plans and policies have changed successively since 1951 with changes in enemy capabilities for destructive attack and changes in our own capabilities for defense, both active and passive.

In October 1952, Mr. Caldwell resigned and Mr. James J. Wadsworth was designated Acting Administrator.

In March 1953, Mr. Val Peterson was appointed Administrator of FCDA and on June 12, 1953, Reorganization Plan No. 3 of 1953 expanded the Office of Defense Mobilization functions and transferred to the Director of ODM the functions of the Chairman of the National Security Resources Board as authorized by National Security Act of 1947. This plan included the Administration's functions as a statutory member of the National Security Council. Executive Order 10461 (June 18, 1953) redefined the functions of ODM, as provided in Reorganization Plan No. 3 of 1953, which included functions of the original ODM and those under the Defense Production Act of 1950.

In 1953, the United States released information on the first thermonuclear test in the Pacific in 1952. This information caused a radical change in civil defense thinking and planning. On

August 8, 1953, Russia announced that "The Government of the Soviet Union must inform the Supreme Soviet that the United States no longer possesses a monopoly on the hydrogen bomb."

The Russian announcement made clear that civil defense was no longer a problem for the United States only, but rather an urgent demand for preparedness throughout the free world.

On June 14, 1957, Mr. Val Peterson resigned as Director of FCDA and Mr. Lewis E. Berry was designated Acting Administrator.

On July 19, 1957, Mr. Leo A. Hoegh was appointed Administrator of FCDA, serving in that capacity until July 1, 1958, when he was named Director of the Office of Civil and Defense Mobilization. Mr. Hoegh continued as Director of OC'DM until January 20, 1961. (After Mr. Hoegh's resignation, and for approximately one week thereafter, Mr. John S. Patterson served as Acting Director; then Mr. Lewis E. Berry was designated Acting Director and served until the appointment of a new Director, on March 9, 1961.)

On April 24, 1958, President Eisenhower sent to the Congress Reorganization Plan No. 1 of 1958. Under this Plan all nonmilitary defense functions of the Federal Government were transferred to the President. These included coordinating and conducting the Nation's interrelated defense mobilization and civil defense functions. The Plan also consolidated the Office of Defense Mobilization and the Federal Civil Defense Administration in the Executive Office of the President. This new office (OC'DM) was made responsible for directing and coordinating the preparedness activities of the Federal departments and agencies and for providing unified nonmilitary defense guidance and assistance to State and local governments.

Two major steps to provide for strengthening the nonmilitary defense capability of the Nation were taken during the 85th Congress. One was Reorganization Plan No. 1 of 1958 which centralized the authority for nonmilitary defense in a new agency under the Executive Office of the President. The other was Public Law 85-606 which further amended the Federal Civil Defense Act of 1950 to permit the orderly expansion of Federal assistance in the field of civil defense.

On July 1, 1958, Executive Order 10773 delegated to the Director of the Office of Defense and Civilian Mobilization all functions transferred to the President by Reorganization Plan No. 1 of 1958.¹

On August 26, 1958, the designation "Office of Defense and Civilian Mobilization" was changed to "Office of Civil and Defense Mobilization" by Public Law 85-763. Mr. Leo A. Hoegh, former Administrator of the Federal Civil Defense Administration, was named Director of OC'DM. "The mission of OC'DM," as described by Director Hoegh, "is protection of life and property by preparing for, and carrying out, nonmilitary functions and the mobilization and management of resources and production." Mr. Hoegh resigned on January 20, 1961.

Executive Order 10782 (September 6, 1958), amended Executive Order 10773 by deleting the words "Defense and Civilian Mobilization" and inserting therefor the words "Civil and Defense Mobilization," as authorized by Public Law 85-763.

President John F. Kennedy announced January 23 his intention to appoint Attorney Frank Burton Ellis of New Orleans as Director of the Office of Civil and Defense Mobilization.

On March 9, 1961, Frank B. Ellis took oath of office as Director of OC'DM.

On May, 25, 1961, President Kennedy, in a special message to the Congress, announced that under authority of Reorganization Plan No. 1 of 1958 he was assigning responsibility for civil defense to the top civilian authority already responsible for continental defense, the Secretary of Defense; and that the OC'DM would be reconstituted as a small staff agency to assist in the coordination of these functions, under the name of Office of Emergency Planning.

On August 1, 1961, the Office of Civil Defense was constituted to carry out the civil defense responsibilities assigned to the Secretary of Defense by Executive Order No. 10952. These functions cover the Federal Civil Defense Act of 1950, as amended, including the development and

¹ Executive Order 10773 transferred to the Director of the new agency certain authorities delegated by Executive Orders 10219, 10242, 10290, 10296, 10312, 10346, 10421, 10427, 10460, 10480, 10494, 10524, 10579, 10600, 10600, 10601, 10634, 10636, 10633, 10640, 10700, 10706, and 10737.

execution of a fallout shelter program and the associated actions for radiological, chemical and biological defense; warning and alerting the population; civil defense communications; damage assessment; donation of Federal surplus property; and assistance to State and local governments.

Executive Order 10958 (August 14, 1961), delegated responsibility for civil defense food stockpiles to the Secretary of Agriculture and responsibility for civil defense medical stockpiles to the Secretary of Health, Education, and Welfare.

Mr. Stuart L. Pittman was named by President Kennedy August 30, 1961, to be Assistant Secretary of Defense (Civil Defense).

The 1962 program was financed by an appropriation of \$207.6 million direct to the Department of Defense in August 1961, plus civil defense appropriations of \$48.3 million transferred from the Office of Emergency Planning.

The program centered on the identification, marking, and stocking of public shelter spaces immediately available in existing structures, in line with the objective of providing the most economical fallout shelter in the quickest possible time.

On February 16, 1962, President Kennedy signed various executive orders (published in the Federal Register February 20, 1962) assigning to other departments and agencies certain emergency preparedness functions in fields related to their activities:

- EO 10997, Secretary of the Interior
- EO 10998, Secretary of Agriculture
- EO 10999, Secretary of Commerce
- EO 11000, Secretary of Labor
- EO 11001, Secretary of Health, Education, and Welfare
- EO 11002, Postmaster General
- EO 11003, Federal Aviation Agency
- EO 11004, Housing and Home Finance Administrator
- EO 11005, Interstate Commerce Commission

APPENDIX B

FALLOUT SHELTER

LOCATED, LICENSED, AND STOCKED

FISCAL YEAR (FY) 1966

FALLOUT SHELTER LOCATED, LICENSED, AND STOCKED FISCAL YEAR

(Protection factor of 40 or higher, 30 or more spaces per facility)

AREA	LOCATED				LICENSED				Facilities
	Facilities		Spaces (000)2/		Facilities		Spaces (000)2/		
	During FY 1966	Cumulative, end of FY 1966	During FY 1966	Cumulative, end of FY 1966	During FY 1966	Cumulative, end of FY 1966	During FY 1966	Cumulative, end of FY 1966	
TOTAL.....	10,775	165,839	13,984	149,624	11,243	93,032	12,049	89,268	11,626
REGION 1.....	2,709	61,589	4,283	49,827	4,321	29,487	4,293	26,185	5,343
Connecticut.....	95	2,914	41	2,220	118	1,847	67	1,632	147
Maine.....	147	649	34	311	78	439	74	255	27
Massachusetts.....	733	6,623	1,029	5,077	261	3,400	428	2,632	278
New Hampshire.....	45	460	18	208	1	295	5	144	31
New Jersey.....	443	7,878	705	6,218	570	3,904	620	3,548	354
New York.....	1,071	40,657	2,372	34,344	3,279	18,080	2,989	17,032	4,242
Rhode Island.....	156	688	68	577	111	508	52	417	60
Vermont.....	19	323	5	138	27	253	4	115	44
Puerto Rico.....	0	1,382	-7	733	76	748	52	406	160
Virgin Islands.....	0	15	0	2	0	13	0	2	0
REGION 2.....	3,595	32,175	2,998	29,583	2,177	18,134	1,918	18,234	1,866
Delaware.....	104	623	88	332	79	420	76	271	49
Dist. of Columbia.....	608	3,027	536	3,824	24	1,131	124	2,444	72
Kentucky.....	28	1,678	39	1,991	60	1,057	46	1,213	53
Maryland.....	162	2,394	27	2,183	184	1,689	123	1,531	164
Ohio.....	213	7,168	144	6,270	284	4,180	141	3,401	413
Pennsylvania.....	1,781	12,910	1,704	11,712	1,249	7,305	1,148	7,287	935
Virginia.....	642	3,503	434	2,748	260	1,762	246	1,727	156
West Virginia.....	57	872	26	524	37	590	13	360	24
REGION 3.....	1,185	10,923	1,151	11,060	1,075	7,493	935	7,594	724
Alabama.....	140	1,846	82	1,319	113	1,343	42	982	71
Florida.....	162	1,861	251	2,494	140	1,096	225	1,526	81
Georgia.....	457	1,951	475	2,912	279	1,436	312	2,219	164
Mississippi.....	71	540	28	380	56	456	21	337	61
North Carolina.....	223	1,955	123	1,463	218	1,367	199	1,128	105
South Carolina.....	-7	696	59	538	43	443	53	371	15
Tennessee.....	119	1,876	133	1,883	223	1,254	84	982	227
Canal Zone.....	0	198	0	71	3	78	0	49	0
REGION 4.....	915	22,694	1,961	22,981	978	13,874	1,787	13,755	1,407
Illinois.....	82	7,809	-159	10,158	157	4,405	51	5,348	625
Indiana.....	16	2,763	-52	2,169	105	1,608	90	1,378	136
Michigan.....	629	4,774	1,416	4,979	264	2,785	835	3,087	203
Minnesota.....	181	3,413	730	2,899	207	2,455	657	2,183	204
Wisconsin.....	7	3,935	26	2,775	245	2,621	155	1,740	239
REGION 5.....	422	8,117	765	8,491	518	6,152	706	6,220	455
Arkansas.....	7	1,432	-68	823	10	1,180	-76	679	40
Louisiana.....	1	882	43	1,237	89	619	99	800	72
New Mexico.....	73	525	64	306	73	450	74	264	64
Oklahoma.....	76	1,485	146	1,259	94	1,273	128	1,032	156
Texas.....	208	3,793	360	5,066	252	2,630	481	3,645	123
REGION 6.....	1,221	12,109	844	10,490	1,099	9,374	735	6,656	1,062
Colorado.....	100	1,652	135	1,445	308	1,016	229	939	182
Iowa.....	37	2,212	11	1,283	141	1,509	40	883	134
Kansas.....	315	2,717	158	1,657	152	1,726	104	1,219	194
Missouri.....	119	4,147	298	4,357	102	2,062	177	2,428	65
Nebraska.....	344	2,748	187	974	240	1,715	101	606	114
North Dakota.....	19	591	10	258	71	458	34	225	152
South Dakota.....	62	666	20	380	74	568	21	255	83
Wyoming.....	89	378	25	176	101	270	28	171	108
REGION 7.....	332	10,415	1,832	12,155	218	2,063	1,403	7,923	425
Arizona.....	158	555	178	576	43	312	88	287	31
California.....	300	7,151	1,564	11,329	310	3,645	1,278	6,775	239
Hawaii.....	39	481	48	342	35	257	8	206	11
Nevada.....	-3	267	-2	226	7	176	8	165	14
Utah.....	58	1,939	45	734	119	648	20	388	129
American Samoa.....	0	2	0	2	0	1	0	2	0
Guam.....	0	20	0	8	4	4	1	1	1
REGION 8.....	178	4,817	170	2,827	227	2,303	272	2,801	344
Alaska.....	14	253	7	113	10	182	18	66	8
Idaho.....	13	397	11	184	35	331	17	151	30
Montana.....	15	662	54	333	47	510	71	263	63
Oregon.....	46	1,372	13	1,203	103	849	40	791	110
Washington.....	88	2,134	85	2,064	182	1,633	126	1,510	153

*Data contained in this table are net; in some areas activity during the year may be negative because decreases due to demolition of buildings, recomputation of original capacity, etc., may outweigh increases due to new construction, etc.

2/2 Figures
3/ Less than

LETTER LOCATED, LICENSED, AND STOCKED FISCAL YEAR (FY) 1966

Protection factor of 40 or higher, 30 or more spaces per facility)

LICENSED					STOCKED (with general supplies)				
Facilities		Spaces (000)2/		Facilities		Spaces (000)2/		Facilities	
	Cumulative, end of FY 1966	During FY 1966	Cumulative end of FY 1966	During FY 1966					
53	93,032	12,049	89,268	11,626	74,667	12,534	68,782	7,480	41,294
51	29,487	4,293	26,185	5,343	22,825	4,972	18,697	2,829	10,845
58	1,847	67	1,632	147	1,583	52	1,234	49	900
58	439	74	255	27	364	29	195	21	157
51	3,400	428	2,632	278	2,410	459	1,882	194	1,193
1	295	5	144	31	283	11	139	16	121
70	3,904	620	3,548	354	2,661	496	2,663	238	1,342
79	18,080	2,989	17,032	4,242	14,437	3,819	11,889	2,229	6,658
11	508	52	417	60	376	61	354	26	219
27	253	4	115	44	236	11	113	22	86
76	748	52	406	160	462	33	224	34	167
0	13	0	2	0	13	0	2	0	2
77	18,134	1,918	18,234	1,866	13,784	2,158	14,525	1,016	7,458
79	420	76	271	49	386	60	208	16	101
24	1,131	124	2,444	72	1,058	297	2,177	62	631
60	1,057	46	1,213	53	947	33	1,021	25	835
24	1,689	123	1,531	164	1,357	218	1,197	141	722
24	4,180	141	3,401	413	2,989	244	2,421	199	1,610
29	7,305	1,148	7,287	935	5,312	1,156	5,872	490	2,572
20	1,762	246	1,727	156	1,242	180	1,337	74	715
37	590	13	360	24	493	10	292	8	266
75	7,493	935	7,594	724	6,408	786	6,545	636	4,554
13	1,343	42	982	71	1,182	73	931	83	742
40	1,096	225	1,526	81	879	112	1,244	129	773
79	1,436	312	2,219	164	1,162	312	1,849	135	970
56	456	21	337	61	417	26	324	66	322
18	1,367	199	1,128	105	1,174	131	945	95	700
43	463	53	371	15	380	19	291	13	230
23	1,254	84	982	227	1,136	114	912	115	778
3	78	0	49	0	78	0	49	0	38
72	13,874	1,787	13,755	1,407	11,813	1,730	9,746	1,114	6,265
57	4,405	51	5,368	625	3,211	306	2,624	529	1,647
05	1,608	90	1,378	136	1,419	78	1,183	94	950
64	2,785	835	3,087	203	2,399	775	2,572	152	1,263
07	2,455	657	2,183	204	2,360	442	1,817	217	1,269
45	2,621	155	1,740	239	2,424	129	1,550	123	1,137
18	6,152	706	6,220	455	5,347	707	5,156	497	3,500
10	1,180	-78	679	40	1,087	115	630	15	410
89	619	99	800	72	507	34	661	35	437
73	450	74	264	64	413	36	268	35	160
94	1,273	128	1,032	136	1,247	137	942	161	760
52	2,630	481	3,445	123	2,093	366	2,716	251	1,733
99	9,324	735	6,656	1,042	7,245	736	5,675	655	3,593
09	1,016	229	939	192	869	226	837	216	670
41	1,509	40	863	134	1,215	46	712	35	529
52	1,726	104	1,219	194	1,337	144	1,054	109	620
02	2,062	177	2,428	65	1,505	170	2,020	89	932
69	1,715	101	606	114	1,150	53	504	60	365
71	458	34	225	152	411	50	204	75	176
74	568	21	255	83	507	17	237	36	205
01	270	28	121	108	251	29	107	36	96
18	5,063	1,403	7,823	425	4,181	1,138	6,120	394	3,269
43	513	88	287	31	275	35	242	55	203
10	3,645	1,278	6,75	239	2,909	1,020	5,241	280	2,579
35	257	8	206	11	203	3	170	1	96
7	176	8	165	14	162	20	148	22	139
19	668	20	388	129	628	40	318	37	252
0	1	0	3/	0	0	0	0	0	0
4	4	1	1	1	4	3/	1	3/	1
37	3,505	272	2,801	364	3,064	267	2,318	338	1,809
10	182	18	86	8	182	16	85	15	78
35	331	17	151	30	312	16	145	24	134
47	510	71	263	63	493	70	258	45	205
03	869	40	791	110	604	51	444	62	392
62	1,633	126	1,510	153	1,473	114	1,386	151	999

be negative because
by outweigh

2/Figures may not add to exact totals, due to rounding.

3/Less than 500.

6

APPENDIX C

OCD APPROPRIATIONS

Following are the appropriations to the Office of Civil Defense since the civil defense program became a part of the Department of Defense:

<i>Fiscal Year</i>	<i>Appropriation (Millions)</i>
1962.....	\$207.6
	(49.6)*
1963.....	133.0
1963 Supplemental.....	15.0
1964.....	111.6
1965.....	105.2
1966.....	106.8
1967.....	102.1
Total.....	\$810.9

* (Transferred from the former Office of Civil and Defense Mobilization to OCD/DoD.)

PROPOSED FY 1968 PROGRAM

The civil defense program for the Office of Civil Defense is budgeted at \$111 million for FY 1968.

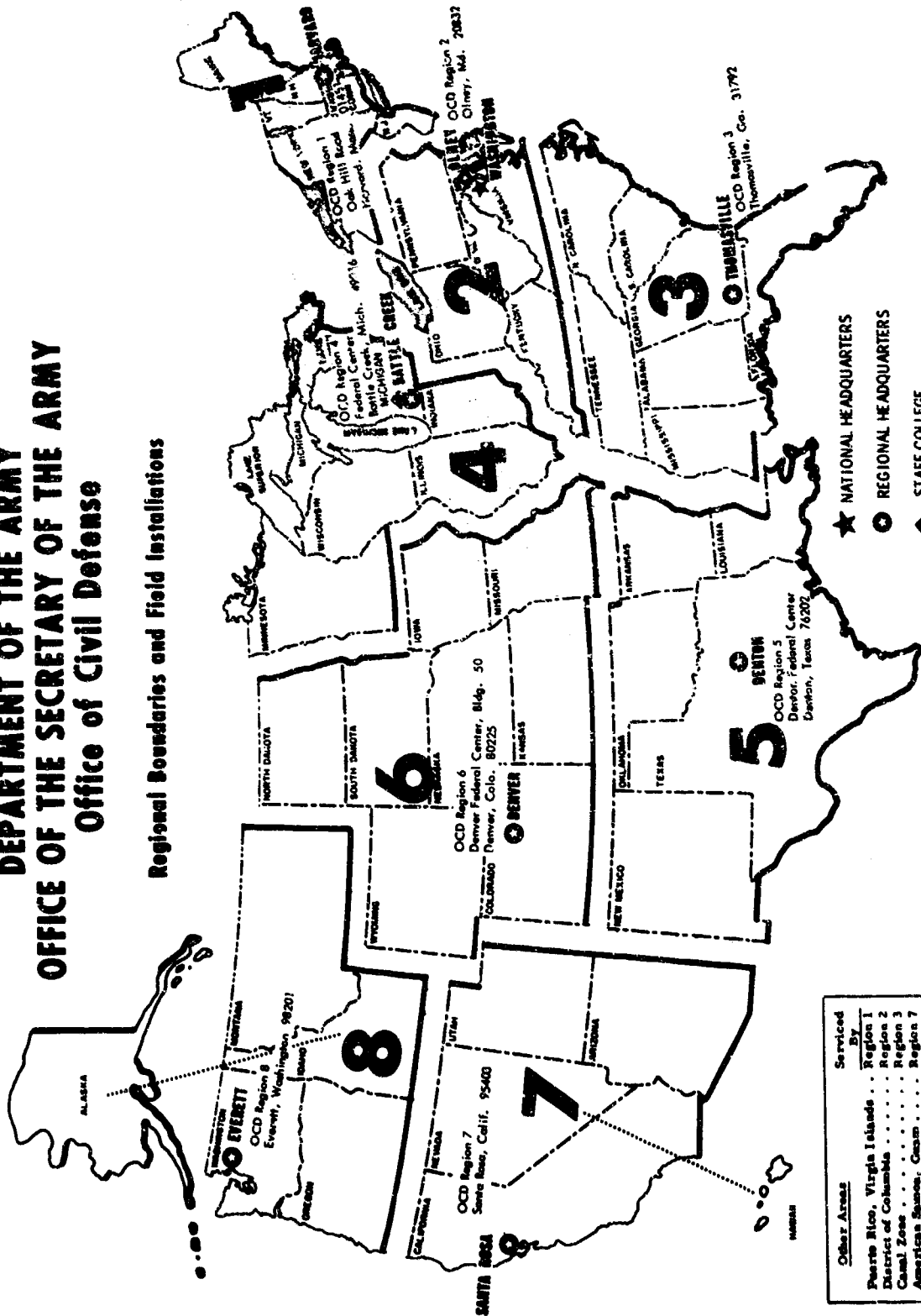
(Organizational Chart)



APPENDIX E

DEPARTMENT OF THE ARMY OFFICE OF THE SECRETARY OF THE ARMY Office of Civil Defense

Regional Boundaries and Field Installations



OCD NO. CH-85
JULY 1967

APPENDIX F

STATE CIVIL DEFENSE OFFICIALS

<i>STATE and OCD Region</i>	<i>Address</i>	<i>STATE and OCD Region</i>	<i>Address</i>
Alabama 3	Director, Civil Defense Department State of Alabama 304 Dexter Avenue Montgomery, Alabama 36104	HAWAII 7	Director of Civil Defense State of Hawaii Building 24, Fort Ruger Honolulu, Hawaii 96816
ALASKA 8	State Director Alaska Disaster Office 1111 East Fifth Avenue Anchorage, Alaska 99501	IDAHO 8	Director, Office of Disaster Relief and Civil Defense Statehouse Boise, Idaho 83701
ARIZONA 7	Director, Department of Civil De- fense and Emergency Planning State Capitol Building Phoenix, Arizona 85007	ILLINOIS 4	Director, Illinois Civil Defense Agency 111 East Monroe Springfield, Illinois 62706
ARKANSAS 5	State Director, The Executive Office of Civil Defense & Disaster Relief P.O. Box 845 Conway, Arkansas 72032	INDIANA 4	Director, Department of Civil De- fense 100 North Senate Avenue Indianapolis, Indiana 46204
CALIFORNIA 7	Director, California Disaster Office P. O. Box 9577 Sacramento, California 95823	IOWA 6	Director, Iowa Civil Defense Divi- sion, Department of Public Defense State Office Building, Room B-33 Des Moines, Iowa 50319
COLORADO 6	State Director of Civil Defense 300 Logan Street Denver, Colorado 80203	KANSAS 6	Deputy Director, Civil Defense Di- vision Basement, State Capitol Building Topeka, Kansas 66612
CONNECTICUT 1	State Civil Defense Director Military Department State Armory, 360 Broad Street Hartford, Connecticut 06115	KENTUCKY 2	The Adjutant General and State Director of Civil Defense The Capitol Frankfort, Kentucky 40601
DELAWARE 2	Director, State Department of Civil Defense Delaware City, Delaware 19706	LOUISIANA 5	State Director of Civil Defense Building 309-A, Area B Jackson Barracks New Orleans, Louisiana 70140
DISTRICT OF COLUMBIA 2	Director of Civil Defense District of Columbia Government 4820 Howard Street, N.W. Washington, D.C. 20016	MAINE 1	Director, Civil Defense and Public Safety State House Augusta, Maine 04330
FLORIDA 3	Director, Florida Civil Defense Agency 1045 Riverside Avenue Jacksonville, Florida 32204	MARYLAND 2	Director, Maryland Civil Defense Agency Pikesville, Maryland 21208
GEORGIA 3	The Adjutant General and State Civil Defense Director 959 E. Confederate Avenue, S.E. P. O. Box 4839 Atlanta, Georgia 30302	MASSACHUSETTS 1	Director, Massachusetts Civil De- fense Agency 400 Worcester Road Framingham, Massachusetts 01706

STATE and OCD Region	Address	STATE and OCD Region	Address
WISCONSIN 4	Director, State Bureau of Civil Defense 480 1/2 Sheboygan Avenue Madison, Wisconsin 53702	GUAM 7	Director of Civil Defense Government of Guam P. O. Box 786 Agana, Guam 96910
WYOMING 6	Director, Wyoming State Civil De- fense Agency P. O. Box 1709 Cheyenne, Wyoming 82001	VIRGIN ISLANDS 1	Commissioner, Department of Pub- lic Safety Office of Civil Defense Charlotte Amalie, P. O. Box 210 St. Thomas, Virgin Islands 00802
CANAL ZONE GOVERNMENT 3	Chief, Civil Defense Canal Zone Government, Box M Balboa Heights, Canal Zone	AMERICAN SAMOA 7	Commissioner of Public Safety and Director of Civil Defense Government of American Samoa Pago Pago, Tutuila, American Samoa 96920
COMMONWEALTH OF PUERTO RICO 1	Director, Office of Civil Defense P. O. Box 5127 Puerta de Tierra Station San Juan, Puerto Rico 00906		

APPENDIX G

STATISTICAL SUMMARY

April 1, 1967

I. Fallout Shelter Surveys

	<i>Structures</i>	<i>Spaces¹</i>
National Fallout Shelter Survey:	173,827	158,316,000
Marked	99,251	90,937,000
Stocked (rated capacity)	81,020	76,275,000
Smaller Structures Survey	93,951	2,263,000
Home Fallout Protection Survey ²	55,205	205,000
HFPS Space PF 20 to 40	1,276,678	4,465,000 ³

¹ Except for last HFPS figure (³), PF 40 or better spaces

² Based on complete reports from Rhode Island, Minnesota and Maine; interim reports from Utah and Nebraska. Total "spaces" are the number of sheltered occupants in the homes.

³ Data indicates that more than 95 percent of this space could be readily improved to the PF 40 standard or higher.

II. Emergency Operating Centers

Completed	2,148
In Process	563

III. Broadcast Station Protection Program

Stations in Program	588
(Estimated National Requirement: 658)	

IV. Warning Points

1,253

V. Radiological Monitoring Stations

59-786

VI. Jurisdictions Filing Program Papers with OCD

4,173

VII. Community Shelter Planning Projects

Funded Projects	112
Funded Projects in Negotiation	137
Non-Funded Projects Started	162

DA Pam 500-3

By Order of the Secretary of the Army:

Official:

KENNETH G. WICKHAM,
*Major General, United States Army,
The Adjutant General.*

HAROLD K. JOHNSON,
*General, United States Army,
Chief of Staff.*

Distribution:

Army:

To be distributed in accordance with DA Form 12-9 requirements for Administration:

Active Army: E. NG: D. USAR: E plus Br Svc Sch (5); Joint Sch (5); Svc College (5); USMA (5).

Civil Defense:

OCD Regions

State Civil Defense Directors

Instructors qualified in fallout shelter analysis

CE-NAVFAC field offices

Libraries